Result

Group 1: control group

Table (1-a) insulin level MIU/ml, serum corticosterone and blood glucose level mg/dl in control group.

n	*S. Insulin MIU/ml*	*S. Corticosterone ug/dl*	*S. glucose mg/dl*
1	3.7	12.8	99
2	3.7	11.2	107
3	3.9	11.3	107
4	4.2	13.5	101
5	4.1	12.4	98
6	4.4	10.7	103
7	4.3	12.6	97
mean	4	12	101
SD	0.282	1.016	4.112
SE	0.107	0.384	1.554

Table (1-b) lipid profile (TGs, Tch. HDL.C and LDL.C mg/dl) in control group.

n	*TGs mg/dl*	*TCh mg/dl*	*HDL.C mg/dl*	*LDL.C mg/dl*
1	89	90	56	16.2
2	90	88	57	13
3	89	91	54	16.2
4	72	88	49	24.5
5	87	99	60	21.6
6	80	86	58	12
7	89	91	54	16.2
mean	85	90	55	17
SD	6.719	4.198	3.552	4.477
SE	2.539	1.587	1.343	1.692

TGs: triglycerides TCh: total cholesterol
HDL.C: HDL cholesterol LDL.C: LDL cholesterol
n: number

Tables (1a-1b) :

Represent the control group that was formed of 7 adult male rats. Given olive oil orally per day for 28 days show that:

The mean of blood insulin level is 4 ± 0.282. The mean of blood corticosterone level is 12 ± 1.016. The mean of blood glucose level is 101 ± 4.112. The mean of blood triglycerides level is 85 ± 6.719**.** The mean of blood cholesterol level is 90 ± 4.198**.** The mean of blood HDL level is 55 ± 3.552. The mean of blood LDL level is 17 ± 4.477.

Group 2: chronic immobilization stress group.

Table (2-a) insulin level MIU/ml, serum corticosterone and blood glucose level mg/dl in chronic immobilization stress group.

n	*S. Insulin MIU/ml*	*S. corticosterone ug/dl*	*S. glucose mg/dl*
1	7.5	16.2	151
2	7.9	19.3	148
3	7.6	22.3	153
4	6.9	16.9	142
5	6.3	15.9	154
6	7.2	21.4	157
7	6.8	17.8	149
mean	7	18.5	150.5
SD	0.546٩	2.536	4.859
SE	0.2067	0.958	1.837

Table (2-b) lipid profile (TGs, Tch, and HDL.C and LDL.C mg/dl) in chronic immobilization stress group.

n	*TGs mg/dl*	*TCh mg/dl*	*HDL.C mg/dl*	*LDL.C mg/dl*
1	120	99	44	31
2	122	100	٣٤	41.6
3	119	93	٤٢	27.2
4	102	104	43	40.7
5	117	107	42	41.6
6	130	110	٣٣	51
7	127	97	41	30.6
mean	119.6	101	39.9	37.7
SD	8.997	5.912	4.451	8.385
SE	3.401	2.235	1.682	3.169

TGs: triglycerides TCh: total cholesterol
HDL.C: HDL cholesterol LDL.C: LDL cholesterol

Tables (2a-2b) :

Represent the stress group that was formed of 7 adult male rats. Given olive oil orally per day for 28 days .Then exposed to chronic immobilization stress two hours per day for seven days show that:

The mean of blood insulin level is 7 ± 0.5469. The mean of blood corticosterone level is 18.5 + is 2.536**.** The mean of blood glucose level is ١٥٠.5 ± 4.859**.** The mean of blood triglycerides level is 119.6 ± 8.997**.** The mean of blood cholesterol level is 101 ± 5.912**.** The mean of blood HDL level is 39.9 ± 4.451**.** The mean of blood LDL level is 37.7 ± 8.385**.**

Group 3: vitamin E group.

Subgroup a : vitamin E 60 mg (3-a) .

Table (3-a) insulin level MIU/ml, serum corticosterone and blood glucose level mg/dl in vitamin E 60 mg group.

n	*S. Insulin MIU/ml*	*S. corticosterone ug/dl*	*S. glucose mg/dl*
1	4.4	11.7	101
2	4.3	11.3	102
3	4.1	12.1	99
4	3.6	12.2	104
5	3.7	10.3	98
6	3.9	11.4	99
7	4.1	10.7	100
mean	4	11	100
SD	0.297	0.69٩	2.07
SE	0.112	0.264	٠.782

Table (3-b) lipid profile (TGs, Tch, and HDL.C and LDL.C mg/dl) in vitamin E 60 mg group.

n	*TGs mg/dl*	*TCh mg/dl*	*HDL.C mg/dl*	*LDL.C mg/dl*
1	80	91	60	15
2	84	98	54	27.2
3	82	93	59	17.6
4	75	88	60	13
5	87	96	51	27.6
6	90	94	60	16
7	81	87	52	18.8
mean	82.7	92	56.5	19
SD	4.889	4.036	4.076	5.82٤
SE	1.848	1.525	1.541	2.201

TGs: triglycerides TCh: total cholesterol
HDL.C: HDL cholesterol LDL.C: LDL cholesterol

Tables (3a-3b):

Represent the vitamin E 60 mg subgroup that was formed of 7 adult male rats. Each rat was given vitamin E (60 mg/kg) orally for 28 days without exposure to stress show that:

The mean of blood insulin level is 4 + 0.297**.** The mean of blood corticosterone level is 11± 0.69٩**.** The mean of blood glucose level is 100 ± 2.07**.** The mean of blood triglycerides level is 82.7 ± 4.889**.** The mean of blood cholesterol level is 92 ± 4.036**.** The mean of blood HDL level is 56.6 ± 4.076**.** The mean of blood LDL level is 19 ± 5.824**.**

Subgroup b : vitamin E 120 mg (3-b):

Table (4-a) insulin level MIU/ml, serum corticosterone and blood glucose level mg/dl in vitamin E 120 mg group.

n	*S. Insulin MIU/ml*	*S. corticosterone ug/dl*	*S. glucose mg/dl*
1	3.6	10.9	97
2	3.7	11.2	99
3	4.2	10.9	101
4	4.2	11.7	100
5	3.8	11.9	102
6	3.9	12.3	99
7	4.1	11	102
mean	3.9	11.4	100
SD	0.243	٠.555	1.826
SE	0.092	٠.209	0.690

Table (4-b) lipid profile (TGs, Tch, and HDL.C and LDL.C mg/dl) in vitamin E 120 mg group.

n	*TGs mg/dl*	*TCh mg/dl*	*HDL.C mg/dl*	*LDL.C mg/dl*
1	61	95	65	17.8
2	55	89	62	16
3	50	94	63	21
4	60	90	68	10
5	55	85	63	11
6	56	93	69	13
7	61	92	67	13
mean	56.9	91	65	14.5
SD	4.059	3.437	2.751	3.923
SE	1.534	1.299	1.040	1.483

TGs: triglycerides TCh: total cholesterol
HDL.C: HDL cholesterol LDL.C: LDL cholesterol

Tables (4a-4b) :

Represent the vitamin E 120 mg subgroup that was formed of 7 adult male rats . Each rat was given vitamin E (120 mg/kg) orally for 28 days without exposure to stress show that:

The mean of blood insulin level is 3.9 ± 0.243**.** The mean of blood corticosterone level is 11.4± 0.555**.** The mean of blood glucose level is 100 ± 1.826**.** The mean of blood triglycerides level is 56.9 ± 4.059**.** The mean of blood cholesterol level is 91 ± 3.437**.** The mean of blood HDL level is 65± 2.751**.** The mean of blood LDL level is 14.5 ± 3.923**.**

Subgroup C : vitamin E 240 mg (3-c):

Table (5 -a) insulin level MIU/ml, serum corticosterone and blood glucose level mg/dl in vitamin E 240 mg group.

n	*S. Insulin MIU/ml*	*S. corticosterone ug/dl*	*S. glucose mg/dl*
1	4.1	12.9	١٠٩.٠٠
2	3.6	11.7	١١٢.٠٠
3	4.3	11.9	١٠٠.٠٠
4	3.9	12.8	١٠٦.٠٠
5	4.1	12.9	١٠٤.٠٠
6	3	12.1	١٠٨.٠٠
7	3.8	11.6	١٠٢.٠٠
mean	3.8	12.3	105.9
SD	0.431	0.579	4.181
SE	0.163	0.219	1.580

Table (5 -b) lipid profile (TGs, Tch, and HDL.C and LDL.C mg/dl) in vitamin E 240 mg group.

n	*TGs mg/dl*	*TCh mg/dl*	*HDL.C mg/dl*	*LDL.C mg/dl*
1	98	95	51	27.4
2	80	103	49	38
3	75	109	52	42
4	81	111	50	45
5	96	107	50	38
6	87	93	49	27.6
7	91	112	47	47
mean	86.9	104	49.7	37.٩
SD	8.629	7.631	1.604	7.814
SE	3.262	2.884	0.606	2.953

TGs: triglycerides TCh: total cholesterol
HDL.C: HDL cholesterol LDL.C: LDL cholesterol

Tables (5a-5b) :

Represent the vitamin E 240 mg subgroup that was formed of 7 adult male rats. Each rat was given vitamin E (240 mg/kg) orally for 28 days without exposure to stress show that:

The mean of blood insulin level is 3.8 ± 0.431**.** The mean of blood corticosterone level is 12.3 ± 0.579**.** The mean of blood glucose level is 105.9 ± 4.181**.** The mean of blood triglycerides level is 86.9 ± 8.629**.** The mean of blood cholesterol level is 104 + 7.631**.** The mean of blood HDL level is 49.7 ± 1.604**.** The mean of blood LDL level is 37.9 ± 7.814**.**

Group 4 : vitamin E and stress group

Subgroup a: vitamin E 60 mg and stress group (4-a):

Table (6-a) insulin level MIU/ml, serum corticosterone and blood glucose level mg/dl in vitamin E 60mg and stress group.

n	*S. Insulin MIU/ml*	*S. corticosterone ug/dl*	*S. glucose mg/dl*
1	4.7	13.7	120
2	5.2	12.9	128
3	5.2	13.9	116
4	5.6	13.4	121
5	4.1	12.5	126
6	4.2	12.6	120
7	5.4	12.2	124
mean	4.9	13	122
SD	0.590	0.647	4.099
SE	0.223	0.245	1.5496

Table (6-b) lipid profile (TGs, Tch, and HDL.C and LDL.C mg/dl) in vitamin E 60 mg and stress group.

n	*TGs mg/dl*	*TCh mg/dl*	*HDL.C mg/dl*	*LDL.C mg/dl*
1	85	85	55	13
2	92	93	52	22.6
3	98	105	58	27.4
4	90	109	60	31
5	109	117	79	16.2
6	99	100	69	11.2
7	93	94	63	12.4
mean	95	100	62	19
SD	7.734	10.829	9.196	7.91٣
SE	2.923	4.093	3.476	2.990

TGs: triglycerides TCh: total cholesterol
HDL.C: HDL cholesterol LDL.C: LDL cholesterol

Tables (6a-6b):

Represent the vitamin E 60 mg and stress subgroup .Each rat was given vitamin E (60 mg/kg) orally for 28 days. Then exposed to immobilization stress two hours per day for seven days show that:

The mean of blood insulin level is 4.9 ± 0.590**.** The mean of blood corticosterone level is 13 ± 0.647**.** The mean of blood glucose level is 122 ± 4.099**.** The mean of blood triglycerides level is 95± 7.734**.** The mean of blood cholesterol level is 100 ± 10.829**.** The mean of blood HDL level is 62 ± 9.196**.** The mean of blood LDL level is 19 ± 7.913**.**

Subgroup b : vitamin E 120 mg and stress group (4-b):

Table (7-a) insulin level MIU/ml, serum corticosterone and blood glucose level mg/dl in vitamin E 120mg and stress group.

n	*S. Insulin MIU/ml*	*S. corticosterone ug/dl*	*S. glucose mg/dl*
1	3.8	11.2	109
2	3.9	11.6	110
3	3.7	12.5	107
4	4.1	12.4	111
5	4.2	11.9	99
6	3.9	13	105
7	4.7	12.1	99
mean	4	12	105.7
SD	0.336	0.60	4.99
SE	0.127	0.227	1.886

Table (7- b) lipid profile (TGs, Tch, and HDL.C and LDL.C mg/dl) in vitamin E 120 mg and stress group.

n	*TGs mg/dl*	*TCh mg/dl*	*HDL.C mg/dl*	*LDL.C mg/dl*
1	88	98	52	28.4
2	76	92	51	25.8
3	69	81	62	15.2
4	71	87	62	10.8
5	80	102	59	27
6	74	102	67	13.2
7	77	83	49	18.6
mean	76	92	57.4	19.٩
SD	6.294	8.783	6.803	7.176
SE	2.379	3.319	2.571	2.712

TGs: triglycerides **TCh: total cholesterol**
HDL.C: HDL cholesterol **LDL.C: LDL cholesterol**

Tables (7a-7b):

Represent the vitamin E 120 mg and stress subgroup. Each rat was given vitamin E (120mg/kg) orally for 28 days. Then exposed to immobilization stress two hours per day for seven days show that:

The mean of blood insulin level is 4 ± 0.336**.** The mean of blood corticosterone level is 12 + 0.60**.** The mean of blood glucose level is 105.7± 4.99**.** The mean of blood triglycerides level is 76 ± 6.294. The mean of blood cholesterol level is 92 ± 8.783**.** The mean of blood HDL level is 57.4 ± 2.571**.** The mean of blood LDL level is 19.9 + 7.176**.**

Subgroup C: vitamin E 240 mg and stress group (4-c):

Table (8-a): insulin level MIU/ml, serum corticosterone and blood glucose level mg/dl in vitamin E 240mg and stress group.

n	*S. Insulin MIU/ml*	*S. corticosterone ug/dl*	*S. glucose mg/dl*
1	4.1	11.3	108
2	3.9	11.7	110
3	3.5	12.2	107
4	4.1	12.7	98
5	3.8	11.9	99
6	3.9	12.9	105
7	4.2	12.0	99
mean	3.9	12	103.7
SD	0.236	0.557	4.957
SE	0.089	0.210	1.874

Table (8- b): lipid profile (TGs, Tch, and HDL.C and LDL.C mg/dl) in vitamin E 240 mg and stress group.

n	*TGs mg/dl*	*TCh mg/dl*	*HDL.C mg/dl*	*LDL.C mg/dl*
1	82	100	72	11.6
2	85	92	61	14
3	77	95	62	17.6
4	79	91	62	13.2
5	80	102	73	13
6	86	96	71	7.8
7	75	90	65	10
mean	86.7	97.3	65.4	14.٦
SD	6.102	4.152	4.117	3.690
SE	2.306	1.569	1.556	1.395

Tables (8a-8b):

Represent the vitamin E 240 mg and stress subgroup .Each rat was given vitamin E (240 mg/kg) orally for 28 days. Then exposed to immobilization stress two hours per day for seven days show that:

The mean of blood insulin level is 3.9± 0.236 &**.** The mean of blood corticosterone level is 12± 0.557**.** The mean of blood glucose level is 103.7 + 4.957**.** The mean of blood triglycerides level is 86.7± 6.102**.** The mean of blood cholesterol level is 97.3 ± 4.152**.** The mean of blood HDL level is 65.4 ± 4.117**.** The mean of blood LDL level is 14.6± 3.690.

Table (9-a):

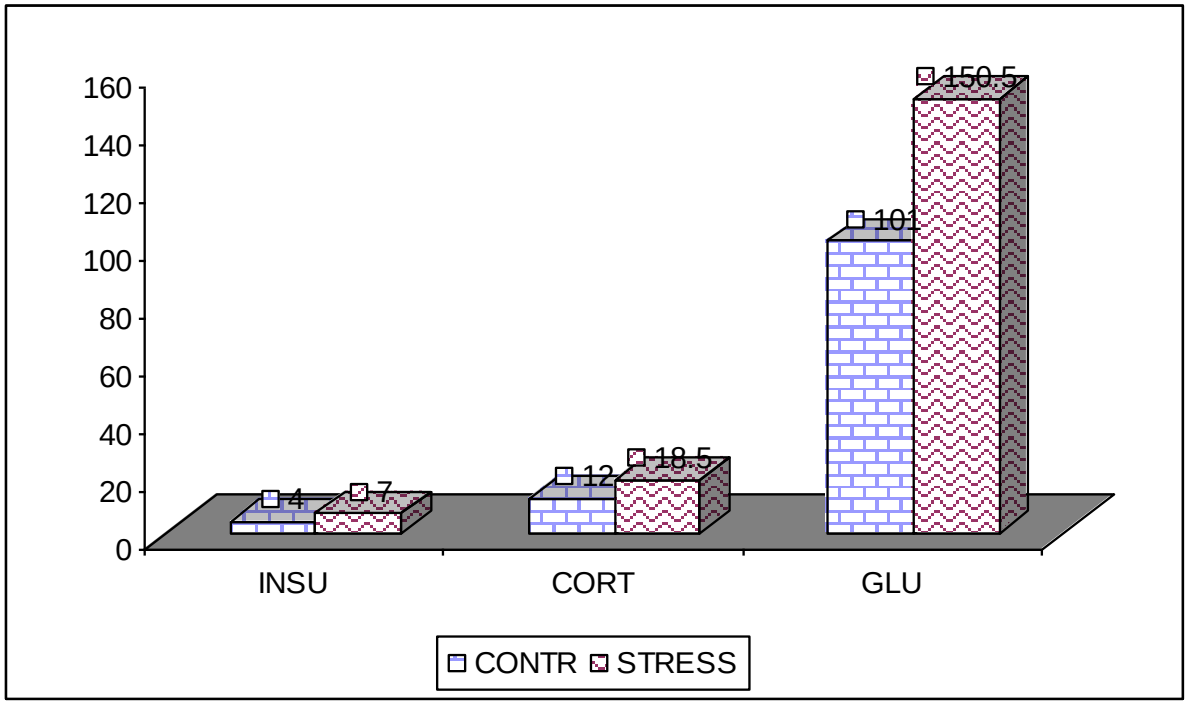
Effect of chronic stress in (group 2) on insulin , corticosterone and blood glucose in rats.

	Insulin MIU/ml		Corticosterone ug/dl		Glucose mg/dl	
	control Group 1	stress Group 2	control Group 1	stress Group 2	control Group 1	stress Group 2
Mean	4	7	12	18.5	101	150.5
SD	0.282	0.546٩	1.016	2.536	4.112	4.859
SE	0.107	0.2067	0.384	0.958	1.554	1.837
t	13.453		6.268		20.306	
p	<0.001*		<0.001*		<0.001*	

* Significant change compared with the corresponding value

SD: Standard deviation. t: Student test

SE: Standard error p: values as compared with stress



(Figure 3-a)

CONTR: Control INSU: Insulin

STRESS: Chronic stress CORT: Corticosterone

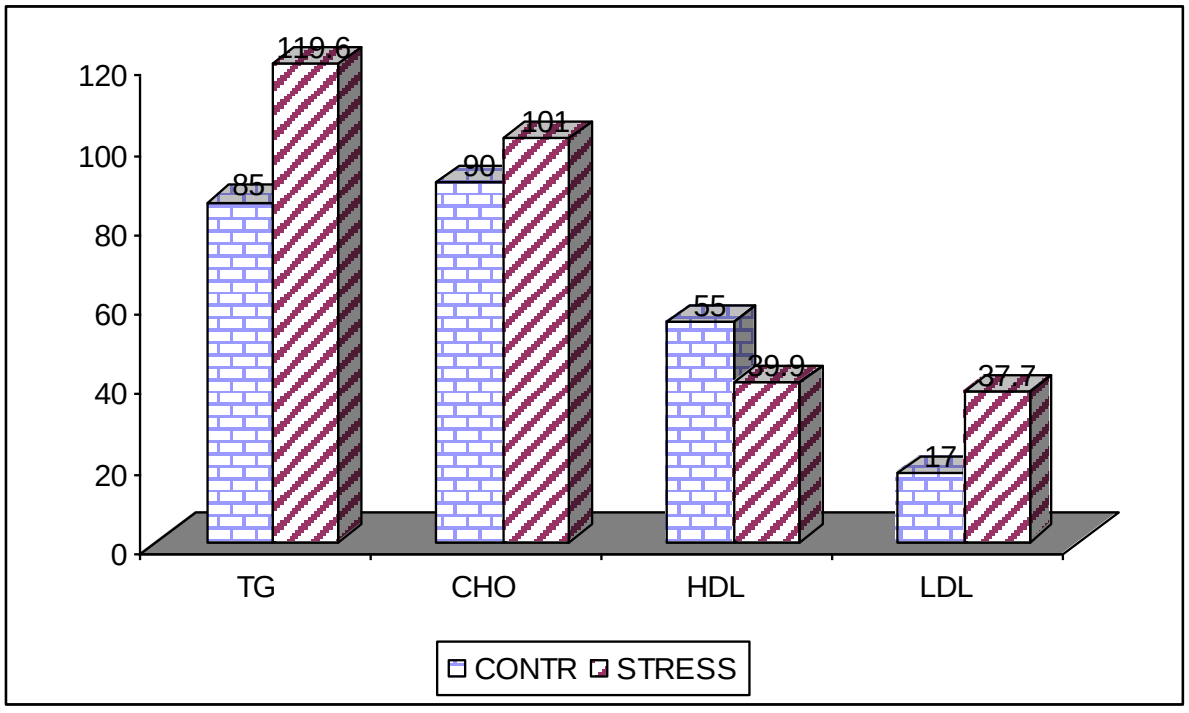
GLU: Glucose

Table (9-b)

Effect of chronic stress in (group 2) on (Triglycerides, cholesterol, HDL.C, LDL.C.)

	Triglycerides Mg/dl		Cholesterol Mg/dl		HDL-C		LDL-C	
	Control Group 1	Stress Group 2	Control Group 1	Stress Group 2	Control Group 1	Stress Group 2	Control Group 1	Stress Group 2
Mean	85	119.6	90	101	55	39.9	17	37.7
SD	6.719	8.997	4.198	5.912	3.552	4.451	4.477	8.385
SE	2.539	3.401	1.587	2.235	1.343	1.682	1.692	3.169
t	8.112		4.014		7.235		5.726	
p	<0.001*		<0.002*		<0.001*		<0.001*	

* significant change compared with control group.
SD: Standard deviation. t: Student test
SE: Standard error p: values as compared with stress



(Figure 3-b)

CONTR: Control TG: Triglycerides
STRESS: Chronic stress CHO: Cholesterol

Tables (9a-9b) & (Figure 3a -3b) :

Show the effect of chronic stress on insulin , corticosterone , blood glucose and lipid profile in group 2 rats.

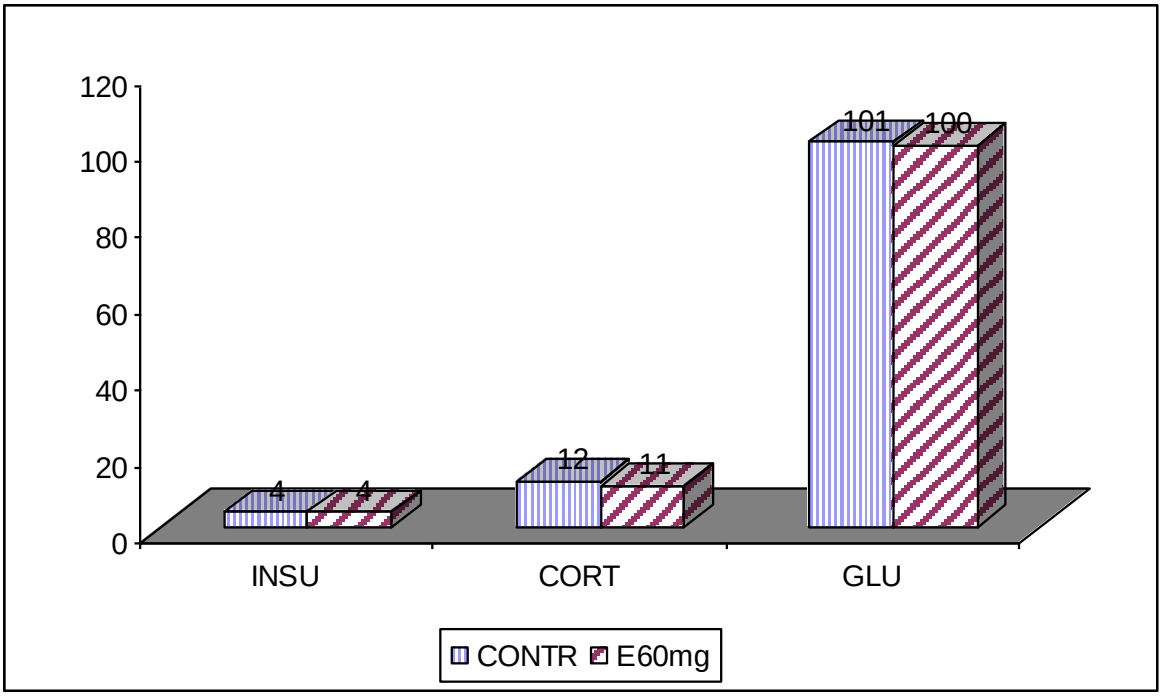
There is significant increase in insulin level as it was changed from 4 ± 0.282 to 7 ± 0.54٧ ($p < 0.001$). Significant increase in corticosterone level as it was changed from 12 ± 1.016 to 18.5 ± 2.536 ($p < 0.001$). Significant increase in glucose level as it was changed from 101 ± 4.112 to 150.5 ± 4.859 ($p < 0.001$). Significant increase in triglycerides level as it was changed from 85 ± 6.719 to 119.6 ± 8.997 ($p < 0.001$). Significant increase in cholesterol level in blood from 90 ± 4.198 to 101 + 5.912 ($p < 0.002$). Significant decrease in HDL level in blood from 55 ± 3.552 to 39.9 ± 4.451 ($p < 0.001$). Significant increase in LDL level as it was changed from 17 ± 4.477 to 37.7 ± 8.385 ($p < 0.001$).

Table (10-a):

Effect of vitamin E 60 mg on insulin, corticosterone and blood glucose in (group 3-a) of rats in comparison with the control group (group 1).

	Insulin MIU/ml		Corticosterone ug/dl		Glucose mg/dl	
	control Gr. 1	Vit. E 60 mg Gr.(3-a)	control Gr. 1	Vit. E 60 mg Gr.(3-a)	control Gr. 1	Vit. E 60 mg Gr.(3-a)
Mean	4	4	12	11	101	100
SD	0.282	0.297	1.016	0.69٩	4.112	2.07
SE	0.107	0.112	0.384	0.264	1.554	٠.782
t	0.185		1.471		0.739	
p	Non- significant		Non- significant		Non- significant	

Gr . : Group
SD: Standard deviation. t: Student test
SE: Standard error p: values as compared with vitamin E 60 mg



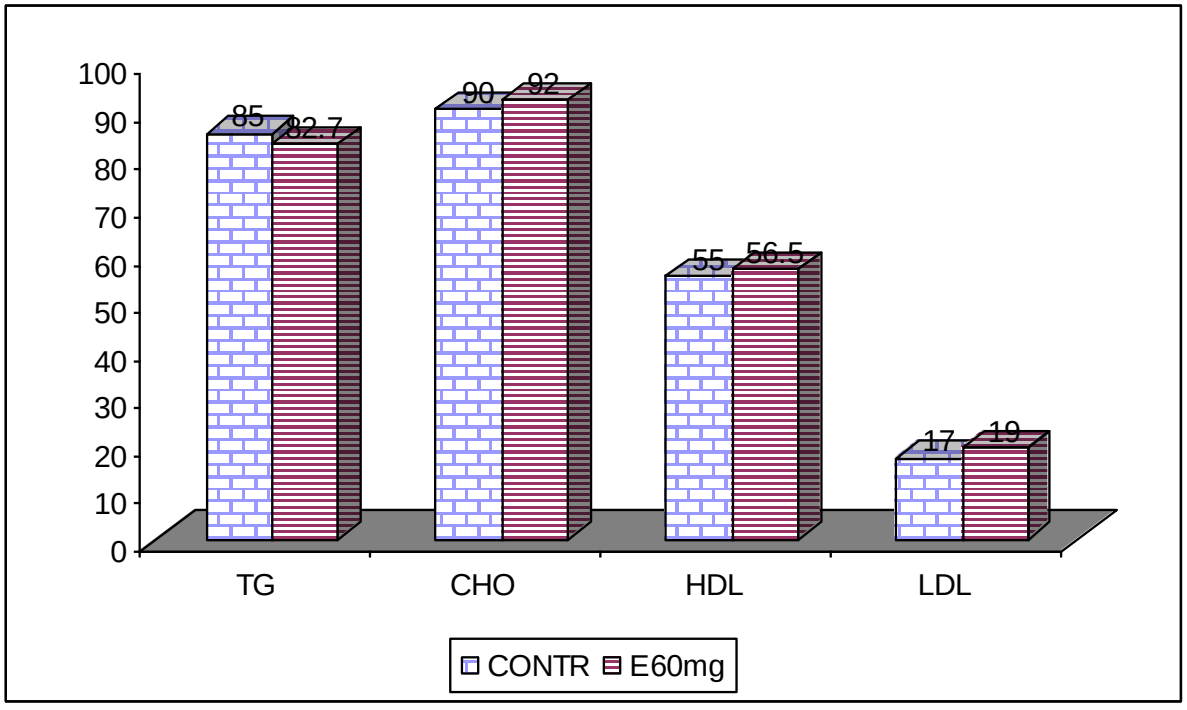
(Figure 4-a)
CONTR: Control CORT: Corticosterone
GLU: Glucose E 60mg: vitamin E 60 mg
INSU: Insulin

Table (10-b):

Effect of vitamin E 60 mg on lipid profile in group (3-a) of rats in comparison with the control group (group 1) rats.

	Triglycerides Mg/dl		Cholesterol Mg/dl		HDL-C		LDL-C	
	Control Gr. 1	Vit. E 60 mg Gr.(3-a)	Control Gr. 1	Vit. E 60 mg Gr.(3-a)	Control Gr. 1	Vit. E 60 mg Gr.(3-a)	Control Gr. 1	Vit. E 60 mg Gr.(3-a)
Mean	85	82.7	90	92	55	56.5	17	19
SD	6.719	4.889	4.198	4.036	3.552	4.076	4.477	5.82٤
SE	2.539	1.848	1.587	1.525	1.343	1.541	1.692	2.201
t	0.773		0.909		0.559		0.798	
p	Non- significant		Non- significant		Non- significant		Non- significant	

SD: Standard deviation. t: Student test
SE: Standard error p: values as compared with vitamin E 60 mg



(Figure 4-b)

CONTR: Control TG: Triglycerides
CHO: Cholesterol E 60mg: vitamin E 60 mg

Tables (10a-10b) & (Figure 4a -4b) :

Show the effect of vitamin E 60 mg on insulin, corticosterone, blood glucose and lipid profile in group (3-a) rats in comparison with the control group (1).

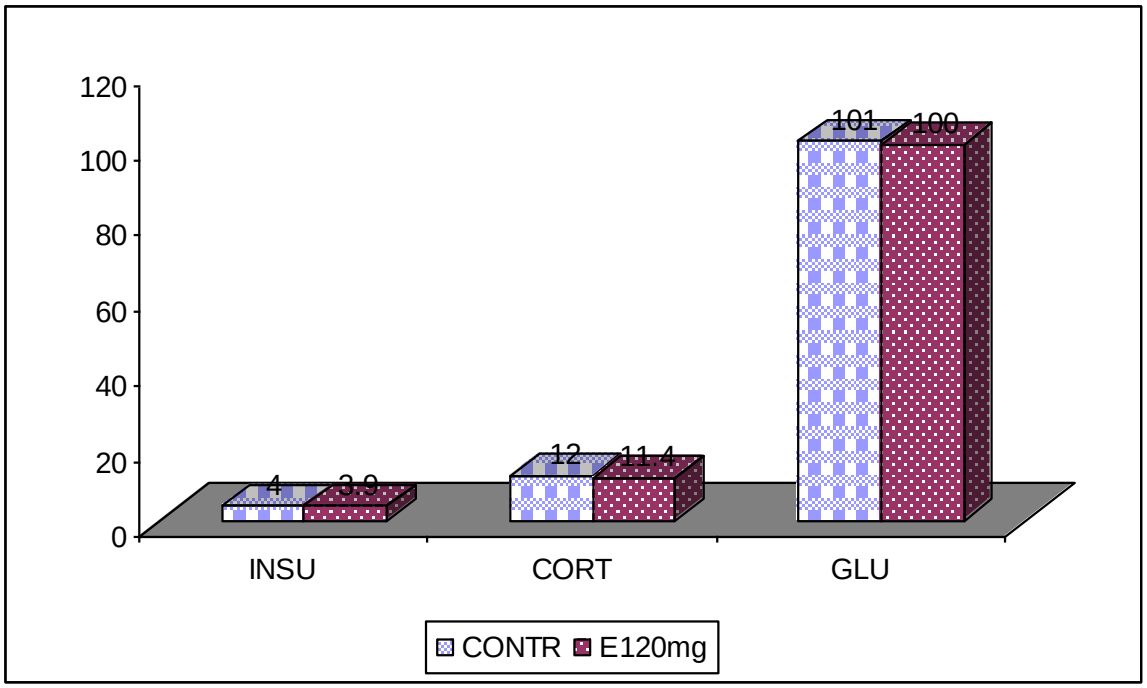
There is non- significant change in insulin level as it was changed from 4 ± 0.282 to 4 ± 0.297. Non- significant decrease in corticosterone level as it was changed from 12 ± 1.016 to 11 ± 0.69٩. Non- significant decrease in glucose level as it was changed from 101 ± 4.112 to 100 ± 2.07. Non- significant decrease in triglycerides level as it was changed from 85 ± 6.719 to 82.7 ± 4.889. Non- significant increase in cholesterol level as it was changed from 90 ± 4.198 to 92 ± 4.036. Non- significant increase in HDL level as it was changed from 55 ± 3.552 to 56.5 + 4.076. Non- significant increase in LDL level as it was changed from 17 ± 4.477 to 19 ± 5.82٤.

Table (11-a):

Effect of vitamin E 120 mg on insulin, corticosterone and blood glucose in group (3-b) rats in comparison with control group (group 1).

	Insulin MIU/ml		Corticosterone ug/dl		Glucose mg/dl	
	control Gr. 1	Vit. E 120 mg Gr.(3-b)	control Gr. 1	Vit. E 120 mg Gr.(3-b)	control Gr. 1	Vit. E 120 mg Gr.(3-b)
Mean	4	3.9	12	11.4	101	100
SD	0.282	0.243	1.016	٠.555	4.112	1.826
SE	0.107	0.092	0.384	٠.209	1.554	0.690
t	0.812		1.502		1.008	
p	Non- significant		Non- significant		Non- significant	

SD: Standard deviation.
SE: Standard error
t: Student test
p: values as compared with vitamin E 120 mg



(Figure 5-a)

CONTR: Control
E 120mg: vitamin E 120 mg
GLU: Glucose
INSU: Insulin
CORT: Corticosterone

Table (11-b)

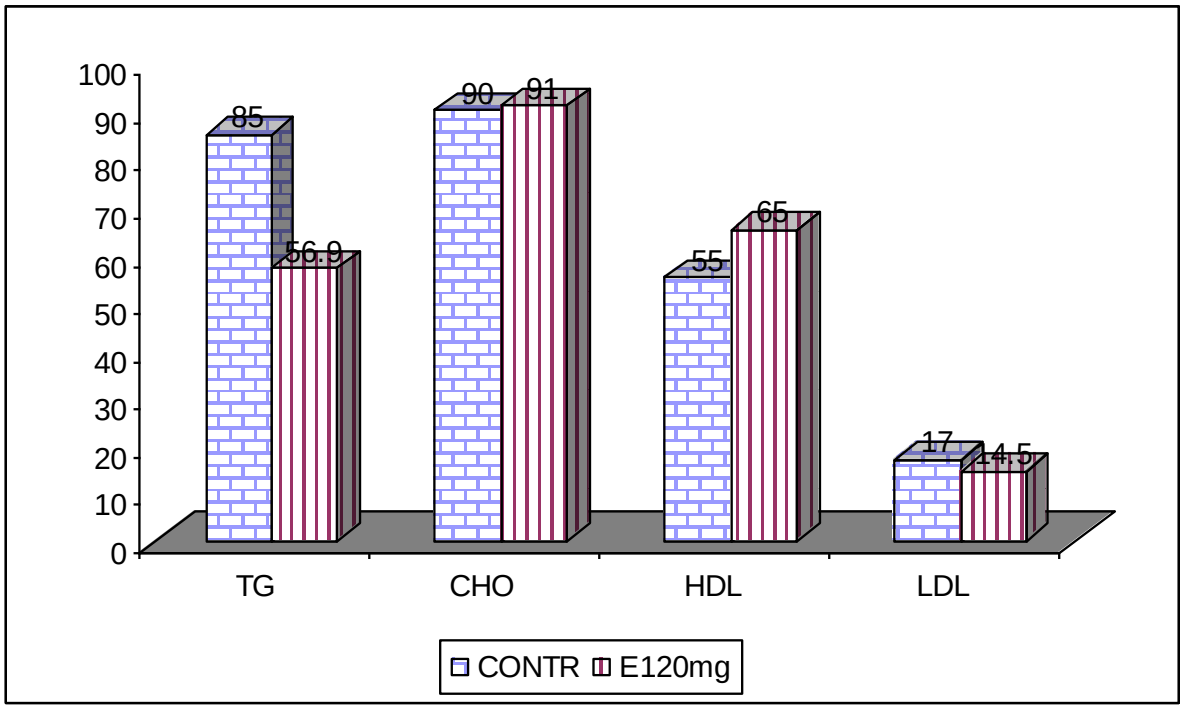
Effect of vitamin E 120 mg on lipid profile in group (3-b) of rats in comparison with control group (group 1).

	Triglycerides Mg/dl		Cholesterol Mg/dl		HDL-C		LDL-C	
	Control Gr. 1	Vit. E 120 mg Gr.(3-b)	Control Gr. 1	Vit. E 120 mg Gr.(3-b)	Control Gr. 1	Vit. E 120 mg	Control Gr. 1	Vit. E 120mg
Mean	85	56.9	90	91	55	65	17	14.5
SD	6.719	4.059	4.198	3.437	3.552	2.751	4.477	3.923
SE	2.539	1.534	1.587	1.299	1.343	1.040	1.692	1.483
t	9.534		0.348		5.804		0.705	
p	<0.001*		Non- significant		<0.001*		Non- significant	

* Significant change compared with control group

SD: Standard deviation. t: Student test

SE: Standard error p: values as compared with vitamin E 120 mg



(Figure 5-b)

CONTR: Control TG: Triglycerides

E 120mg: vitamin E 120 mg CHO: Cholesterol

Tables (11a-11b) & (Figure 5a -5b) :

Show the effect of vitamin E 120 mg on insulin, corticosterone , blood glucose and lipid profile in group (3-b) rats in comparison with control group (group 1).

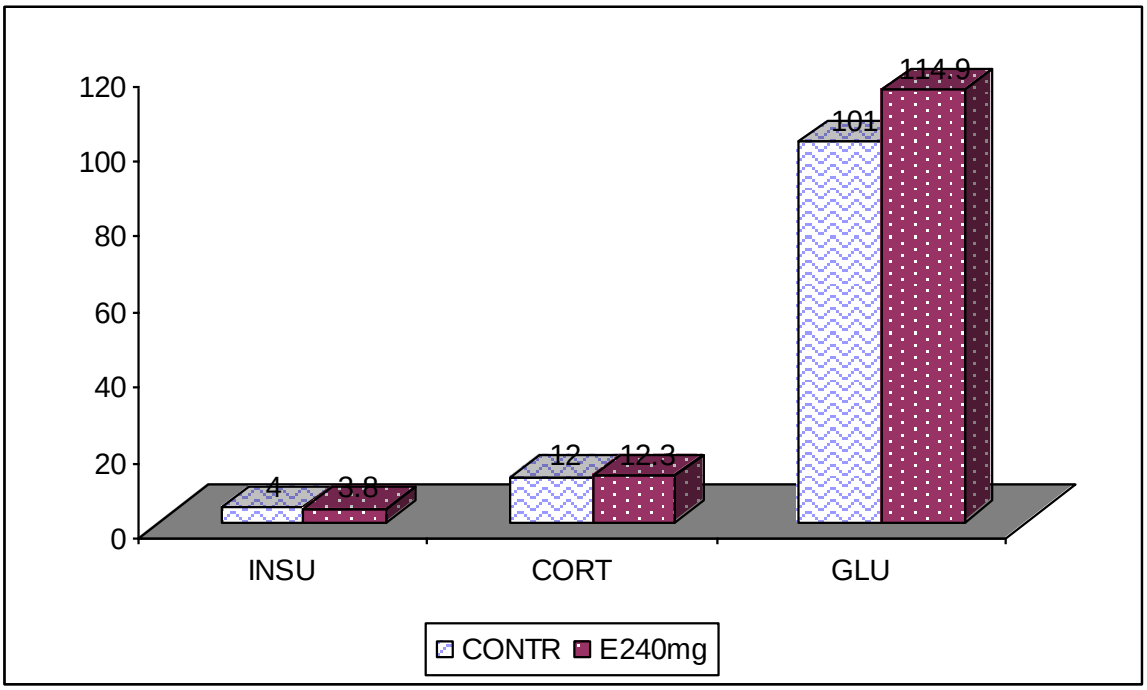
There is non- significant decrease in insulin level as it was changed from 4 ± 0.282 to 3.9 ± 0.243. Non- significant decrease in corticosterone level as it was changed from 12 ± 1.016 to 11.4 ± 0.555. Non- significant decrease in glucose level as it was changed from 101 ± 4.112 to 100 ± 1.826. Significant decrease in triglycerides level as it was changed from 85 ± 6.719 to 56.9 ± 4.059 ($p < 0.001$). Non- significant increase in cholesterol level as it was changed from 90 ± 4.198 to 91 ± 3.437. Significant increase in HDL level as it was changed from 55 ± 3.552 to 65 + 2.751 ($p < 0.001$). Non- significant decrease in LDL level as it was changed from 17 ± 4.477 to 14.5 ± 3.923.

Table (12-a):

Effect of vitamin E 240 mg on insulin, corticosterone and blood glucose in group (3-c) rats in comparison with control group (group 1).

	Insulin MIU/ml		Corticosterone ug/dl		Glucose mg/dl	
	control Gr. 1	Vit. E 240 mg Gr.(3-c)	control Gr. 1	Vit. E 240 mg Gr.(3-c)	control Gr. 1	Vit. E 240 mg Gr.(3-c)
Mean	4	3.8	12	12.3	101	114.٩
SD	0.282	0.431	1.016	0.579	4.112	6.17٦
SE	0.107	0.163	0.384	0.219	1.554	2.334
t	1.101		0.452		1.869	
p	Non- significant		Non- significant		Non- significant	

SD: Standard deviation. t: Student test
SE: Standard error p: values as compared with vitamin E 240 mg



(Figure 6-a)

CONTR: Control INSU: Insulin
E 240mg: vitamin E 240 mg CORT: Corticosterone
GLU: Glucose

Table (12-b)

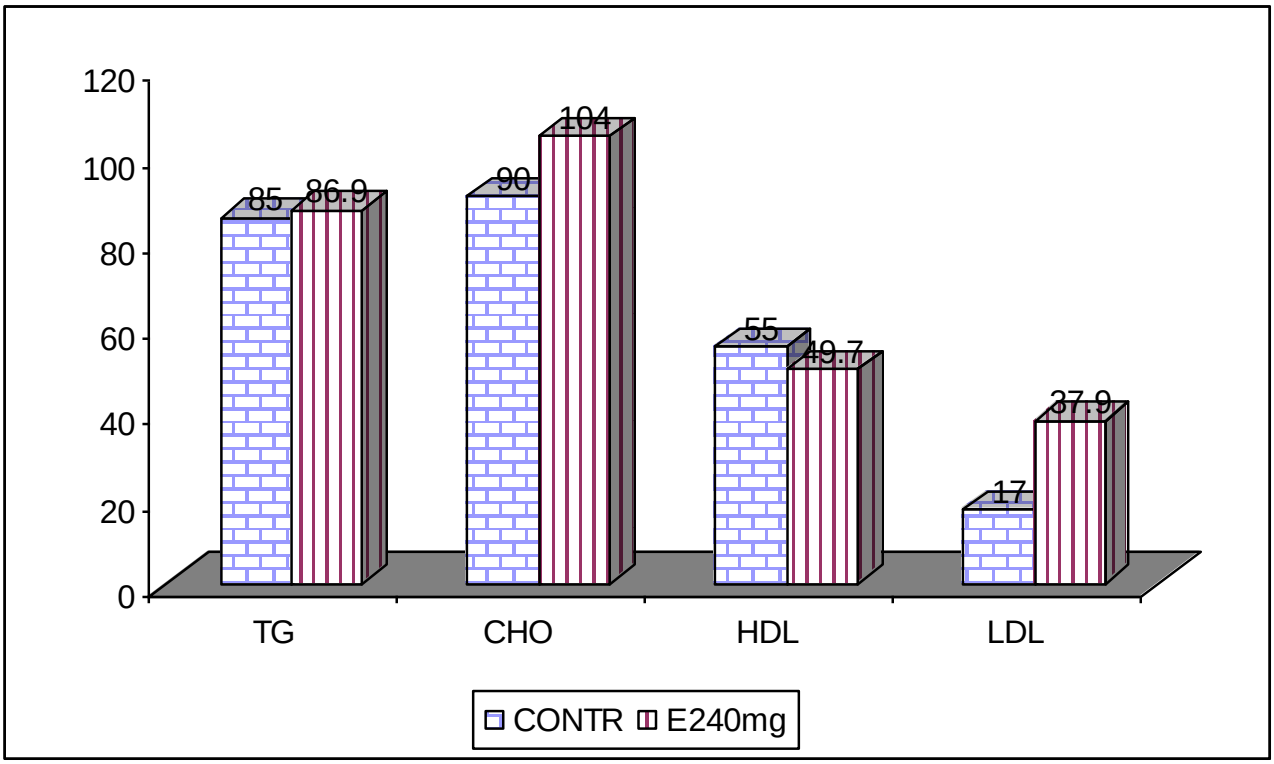
Effect of vitamin E 240 mg on lipid profile in group (3-c) rats in comparison with control group (group 1).

	Triglycerides Mg/dl		Cholesterol Mg/dl		HDL-C		LDL-C	
	Control Gr. 1	Vit. E 240 mg Gr.(3-c)	Control Gr. 1	Vit. E 240 mg Gr.(3-c)	Control Gr. 1	Vit. E 240 mg Gr.(3-c)	Control Gr. 1	Vit. E 240 mg Gr.(3-c)
Mean	85	86.9	90	104	55	49.7	17	37.٩
SD	6.719	8.629	4.198	7.631	3.552	1.604	4.477	7.814
SE	2.539	3.262	1.587	2.884	1.343	0.606	1.692	2.953
t	0.415		4.209		3.879		3.879	
p	Non- significant		<0.001*		<0.002*		<0.001*	

* Significant change compared with control group

SD: Standard deviation. t: Student test

SE: Standard error p: values as compared with vitamin E 240 mg



(Figure 6-b)

CONTR: Control TG: Triglycerides

E 240mg: vitamin E 240mg CHO: Cholesterol

Tables (12a-12b) & (Figure 6a -6b) :

Show the effect of vitamin E 240 mg on insulin , corticosterone , blood glucose and lipid profile in group (3-c) rats in comparison with control group (group 1).

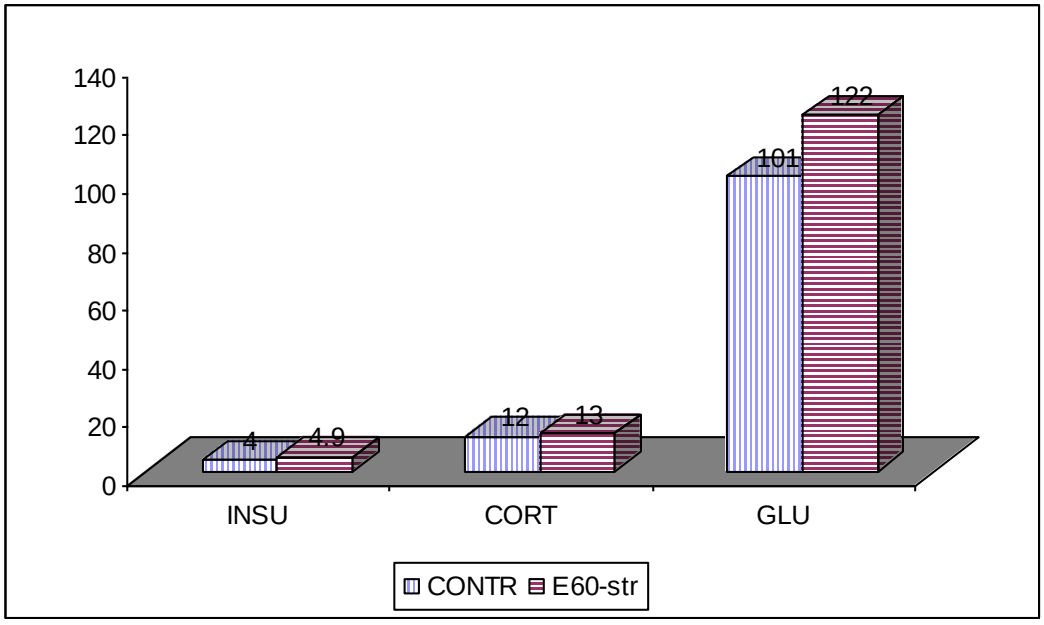
There is non- significant decrease in insulin level as it was changed from 4 ± 0.282 to 3.8 ± 0.431. Non- significant increase in corticosterone level as it was changed from 12 ± 1.016 to 12.3 ± 0.579. Non- significant increase in glucose level as it was changed from 101 ± 4.112 to 114.9 ± 6.17٦. Non- significant increase in triglycerides level as it was changed from 85 ± 6.719 to 86.9 ± 8.629. Significant increase in cholesterol level as it was changed from 90 ± 4.198 to 104 ± 7.631($p < 0.001$). Significant decrease in HDL level as it was changed from 55 ± 3.552 to 49.7 ± 1.604 ($p < 0.001$). Significant increase in LDL level as it was changed from 17 ± 4.477 to 37.9 ± 7.814 ($p < 0.001$).

Table (13-a):

Effect of vitamin E 60 mg and stress on insulin, corticosterone and blood glucose in group (4-a) rats in comparison with control group (group 1).

	Insulin MIU/ml		Corticosterone ug/dl		Glucose mg/dl	
	control Gr. 1	Vit. E 60 mg -stress Gr.(4-a)	control Gr. 1	Vit. E 60 mg -stress Gr.(4-a)	control Gr. 1	Vit. E 60 mg -stress Gr.(4-a)
Mean	4	4.9	12	13	101	122
SD	0.282	0.590	1.016	0.647	4.112	4.099
SE	0.107	0.223	0.384	0.245	1.554	1.5496
t	3.526		2.102		9.309	
p	<0.05*		Non- significant		<0.001*	

* Significant change compared with control group
SD: Standard deviation. t: Student test
SE: Standard error p: values as compared with vitamin E 60 mg &stress



(Figure 7-a)

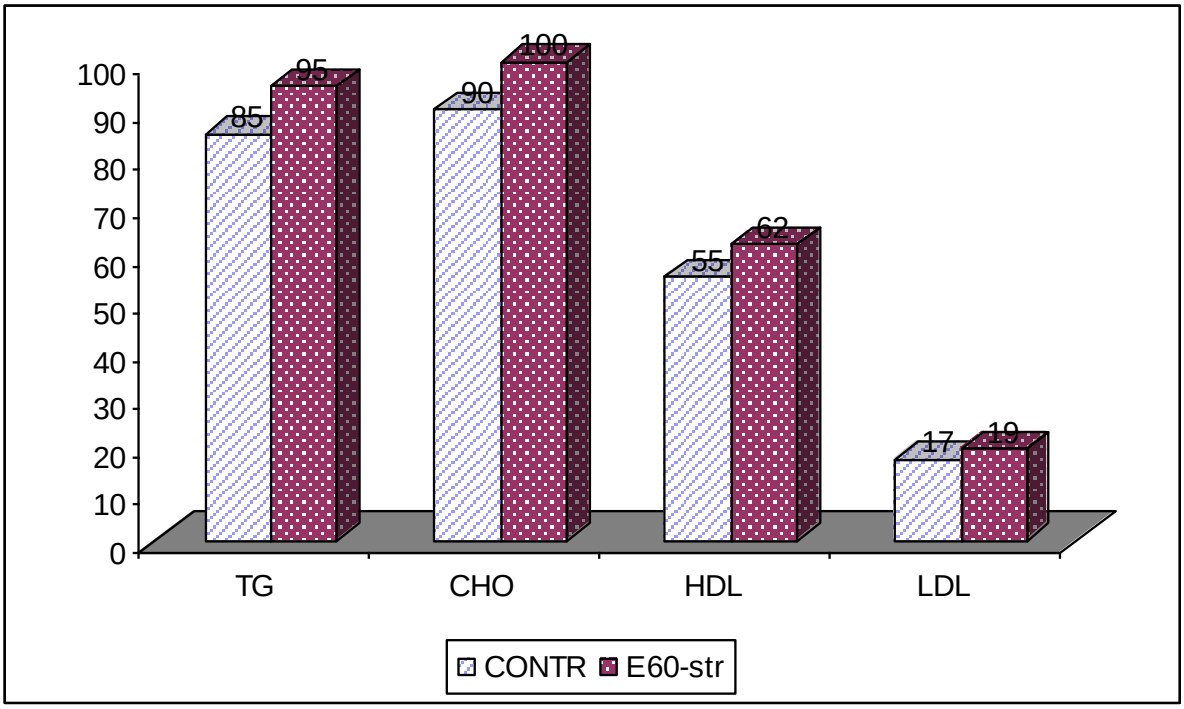
CONTR: Control
E 60-str: vitamin E 60 mg & chronic stress
CORT: Corticosterone
INSU: Insulin
GLU: Glucose

Table (13-b)

Effect of vitamin E 60 mg and stress on lipid profile in group (4-a) rats in comparison with control group (group 1).

	Triglycerides Mg/dl		Cholesterol Mg/dl		HDL-C		LDL-C	
	Control Gr. 1	Vit. E 60 mg -stress Gr.(4-a)	Control Gr. 1	Vit. E 60 mg -stress Gr.(4-a)	Control Gr. 1	Vit. E 60 mg -stress Gr.(4-a)	Control Gr. 1	Vit. E 60 mg -stress Gr.(4-a)
Mean	85	95	90	100	55	62	17	19
SD	6.719	7.734	4.198	10.829	3.552	9.196	4.477	7.91٣
SE	2.539	2.923	1.587	4.093	1.343	3.476	1.692	2.990
t	2.583		2.278		1.840		1.840	
p	Non- significant		Non- significant		Non- significant		Non- significant	

SD: Standard deviation. t: Student test
SE: Standard error p: values as compared with vitamin E 60 mg &stress



(Figure 7-b)

CONTR: Control
E 60-str: vitamin E 60 mg & chronic stress

TG: Triglycerides
CHO: Cholesterol

Tables (13a-13b) & (Figure 7a -7b) :

Show the effect of vitamin E 60 mg and stress on insulin , corticosterone , blood glucose and lipid profile in group (4-a) rats in comparison with control group (group 1).

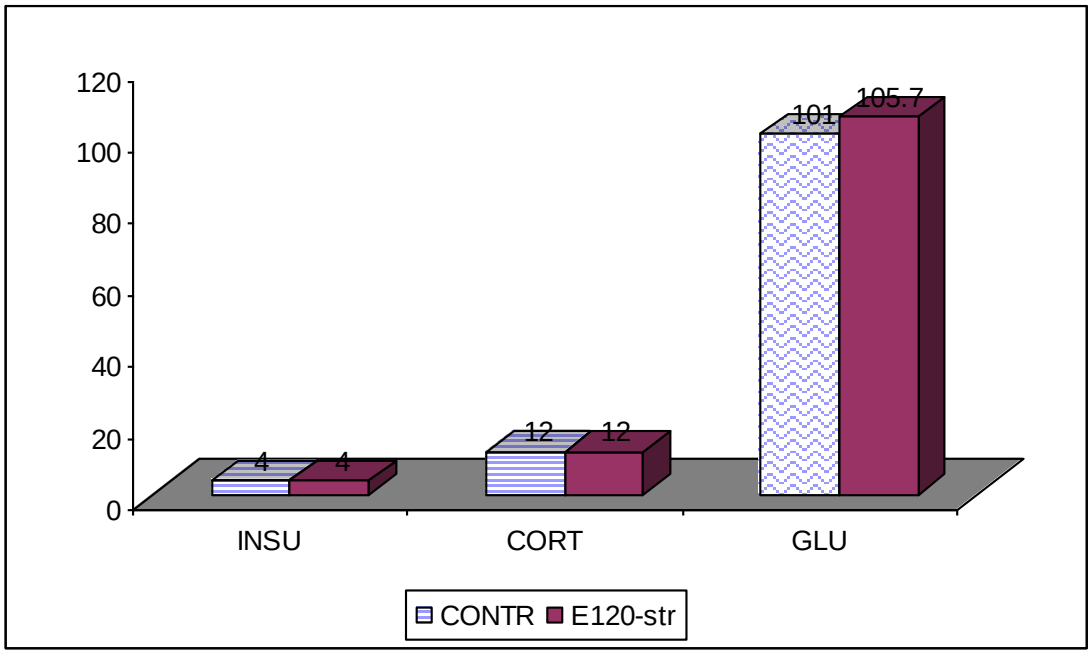
There is significant increase in insulin level as it was changed from 4 ± 0.282 to 4.9 ± 0.590 ($p < 0.05$). Non- significant increase in corticosterone level as it was changed from 12 ± 1.016 to 13 ± 0.647. Significant increase in glucose level as it was changed from 101 ± 4.112 to 122 ± 4.099 ($p < 0.001$). Non-significant increase in triglycerides level as it was changed from 85 ± 6.719 to 95 ± 7.734. Non- significant increase in cholesterol level as it was changed from 90 ± 4.198 to 100 ± 10.829. Non-significant increase in HDL level as it was changed from 55 ± 3.552 to 62 ± 9.196. Non- significant increase in LDL level as it was changed from 17 ± 4.477 to 19 ± 7.91٣.

Table (14-a):

Effect of vitamin E 120 mg and stress on insulin, corticosterone and blood glucose in group (4-b) rats in comparison with control group (group 1).

	Insulin MIU/ml		Corticosterone ug/dl		Glucose mg/dl	
	control Gr. 1	Vit. E 120 mg -stress Gr.(4-b)	control Gr. 1	Vit. E 120 mg -stress Gr.(4-b)	control Gr. 1	Vit. E 120 mg -stress Gr.(4-b)
Mean	4	4	12	12	101	105.7
SD	0.282	0.336	1.016	0.60	4.112	4.99
SE	0.107	0.127	0.384	0.227	1.554	1.886
t	0.001		0.064		1.637	
p	Non- significant		Non- significant		Non- significant	

SD: Standard deviation. t: Student test
SE: Standard error p: values as compared with vitamin E 120 mg &stress



(Figure 8-a)

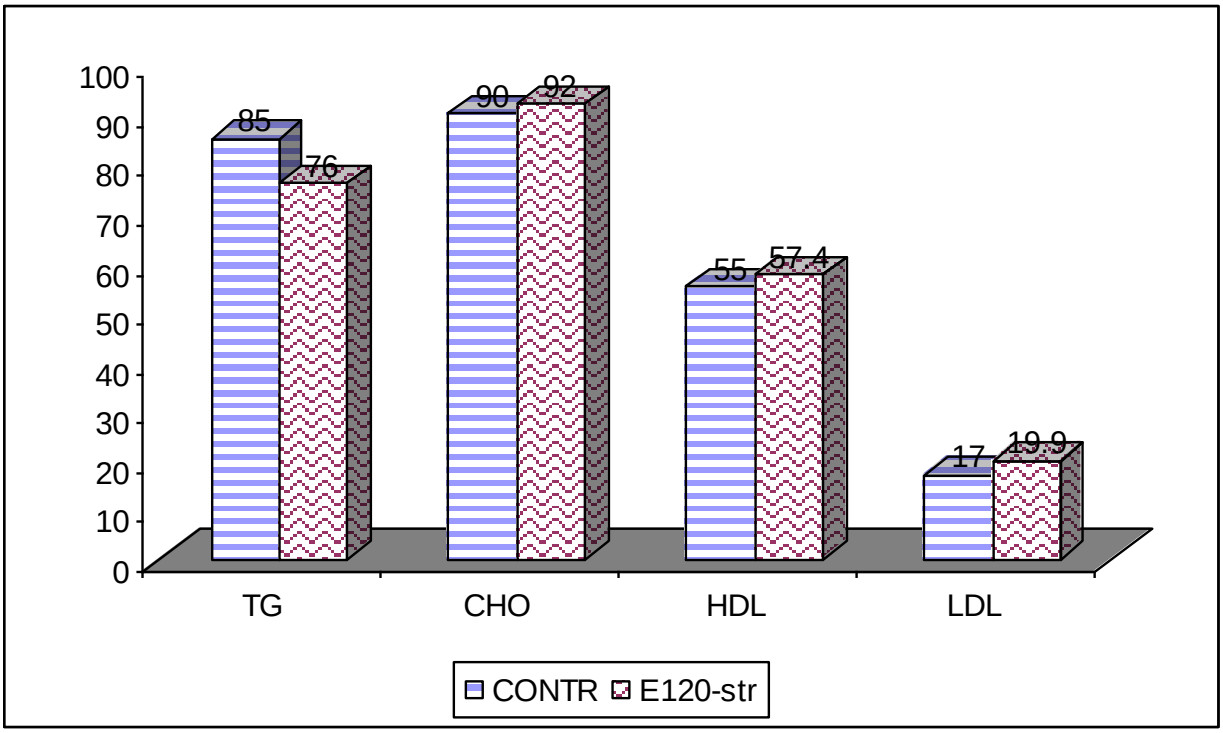
CONTR: Control
E 120-str: vitamin E 120mg & chronic stress
CORT: Corticosterone
INSU: Insulin
GLU: Glucose

Table (14-b)

Effect of vitamin E 120 mg and stress on lipid profile in group (4-b) rats in comparison with control group (group 1).

	Triglycerides Mg/dl		Cholesterol Mg/dl		HDL-C		LDL-C	
	Control Gr. 1	Vit. E 120 mg -stress Gr.(4-b)	Control Gr. 1	Vit. E 120 mg -stress Gr.(4-b)	Control Gr. 1	Vit. E 120 mg -stress Gr.(4-b)	Control Gr. 1	Vit. E 120 mg -stress Gr.(4-b)
Mean	85	76	90	92	55	57.4	17	19.٩
SD	6.719	6.294	4.198	8.783	3.552	6.803	4.477	7.176
SE	2.539	2.379	1.587	3.319	1.343	2.571	1.692	2.712
t	٠.466		2.504		0.689		0.689	
p	Non- significant		Non- significant		Non- significant		Non- significant	

SD: Standard deviation. t: Student test
SE: Standard error p: values as compared with vitamin E 120 mg &stress



(Figure 8-b)

CONTR: Control
E 120-str: vitamin E 120 mg & chronic stress

TG: Triglycerides
CHO: Cholesterol

Tables (14a-14b) & (Figure 8a -8b) :

Show the effect of vitamin E 120 mg and stress on insulin , corticosterone , blood glucose and lipid profile in group (4-b) rats in comparison with control group (group 1).

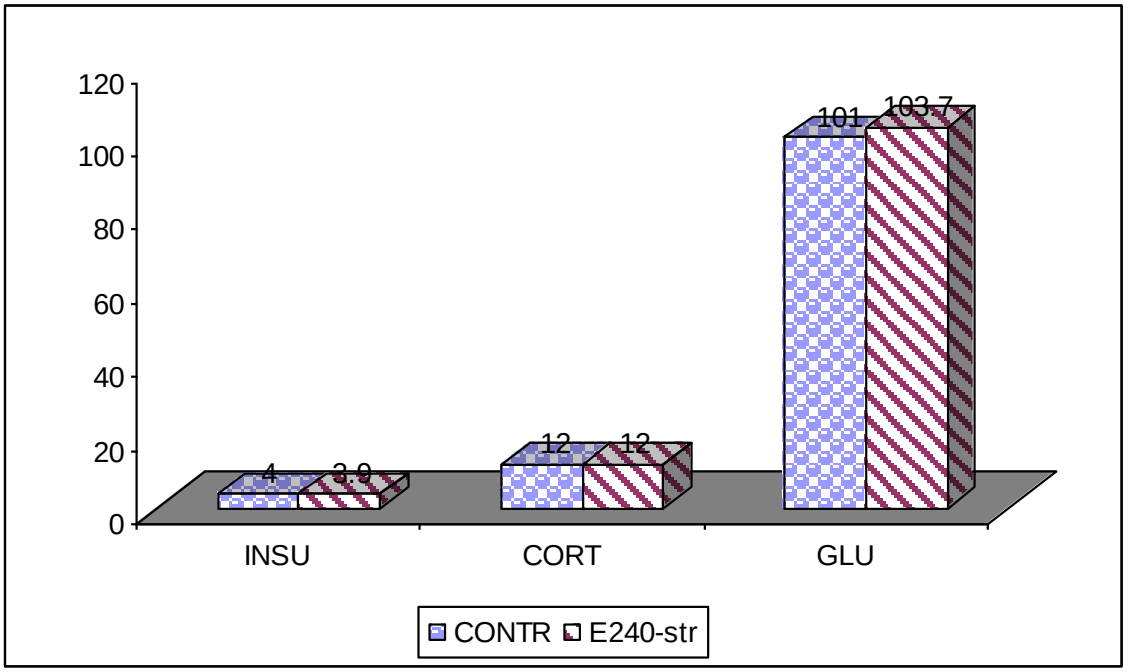
There is non- significant change in insulin level as it was changed from 4 ± 0.282 to 4 ± 0.336. Non- significant change in corticosterone level as it was changed from 12 ± 1.016 to 12 ± 0.60. Non- significant increase in glucose level as it was changed from 101 ± 4.112 to 105.7 ± 4.99. Non- significant decrease in triglycerides level as it was changed from 85 ± 6.719 to 76 ± 6.294. Non- significant increase in cholesterol level as it was changed from 90 ± 4.198 to 92 ± 8.783. Non- significant increase in HDL level as it was changed from 55 ± 3.552 to 57.4 ± 6.803. Non- significant increase in LDL level as it was changed from 17 ± 4.477 to 19.9 ± 7.176.

Table (15-a):

Effect of vitamin E 240 mg and stress on insulin, corticosterone and blood glucose in group (4-c) rats in comparison with control group (group 1).

	Insulin MIU/ml		Corticosterone ug/dl		Glucose mg/dl	
	control Gr. 1	Vit. E 240 mg -stress Gr.(4-c)	control Gr. 1	Vit. E 240 mg -stress Gr.(4-c)	control Gr. 1	Vit. E 240 mg -stress Gr.(4-c)
Mean	4	3.9	12	12	101	103.7
SD	0.282	0.236	1.016	0.557	4.112	4.957
SE	0.107	0.089	0.384	0.210	1.554	1.874
t	٠.822		0.065		0.822	
p	Non- significant		Non- significant		Non- significant	

SD: Standard deviation. t: Student test
SE: Standard error p: values as compared with vitamin E 240 mg &stress



(Figure 9-a)

CONTR: Control
E 240-str: vitamin E 240mg & chronic stress
GLU: Glucose
INSU: Insulin
CORT: Corticosterone

Table (15-b):

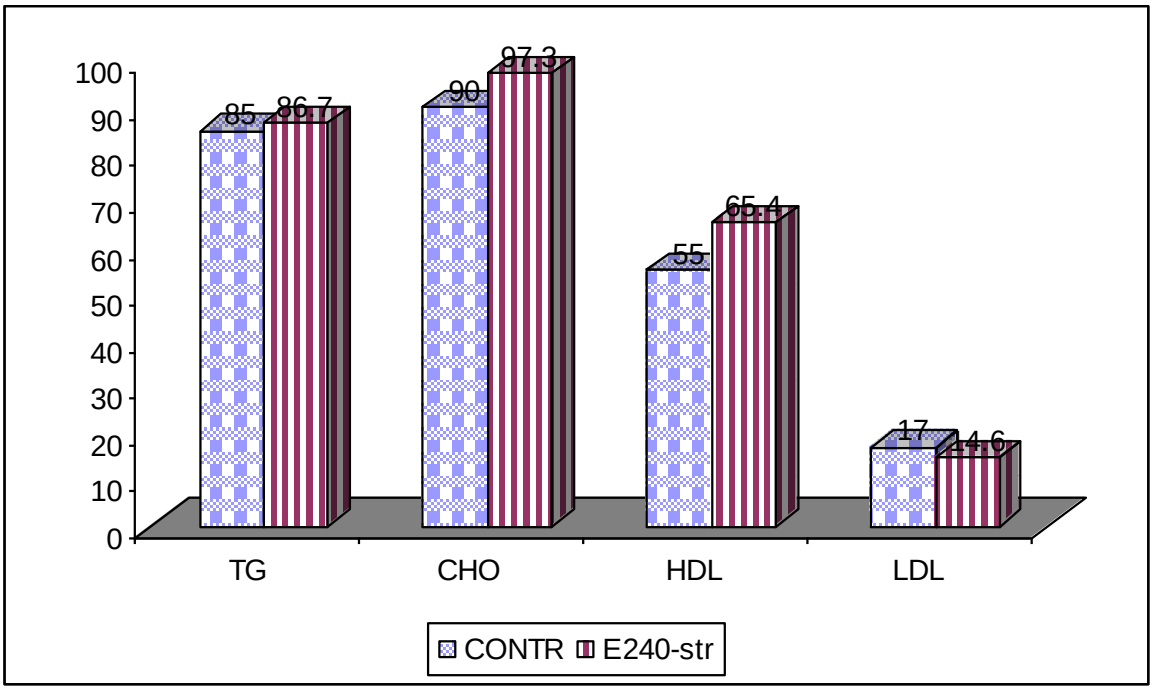
Effect of vitamin E 240 mg and stress on lipid profile in group (4-c) rats in comparison with control group (group 1).

	Triglycerides Mg/dl		Cholesterol Mg/dl		HDL-C		LDL-C	
	Control Gr. 1	Vit. E 240 mg -stress Gr.(4-c)	Control Gr. 1	Vit. E 240 mg -stress Gr.(4-c)	Control Gr. 1	Vit. E 240 mg -stress Gr.(4-c)	Control Gr. 1	Vit. E 240 mg -stress Gr.(4-c)
Mean	85	86.7	90	97.3	55	65.4	17	14.٦
SD	6.719	6.102	4.198	4.152	3.552	4.117	4.477	3.690
SE	2.539	2.306	1.587	1.569	1.343	1.556	1.692	1.395
t	0.458		3.073		4.865		1.153	
p	Non- significant		Non- significant		<0.001*		Non- significant	

* Significant change compared with control group

SD: Standard deviation. t: Student test

SE: Standard error p: values as compared with vitamin E 240 mg &stress



(Figure 9-b)

CONTR: Control

E 240-str: vitamin E 240 mg & chronic stress

TG: Triglycerides

CHO: Cholesterol

Tables (15a-15b) & (Figure 9a -9b) :

Show the effect of vitamin E 240 mg and stress on insulin , corticosterone , blood glucose and lipid profile in group (4-c) rats in comparison with control group (group 1).

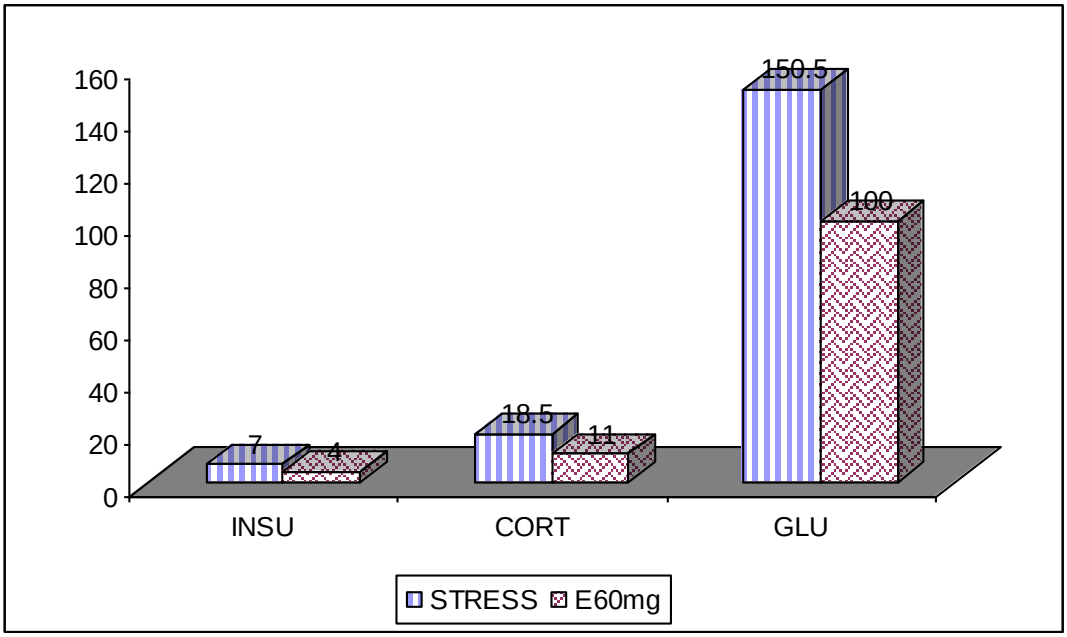
There is non- significant decrease in insulin level as it was changed from 4 ± 0.282 to 3.9 ± 0.236. Non- significant change in corticosterone level as it was changed from 12 ± 1.016 to 12 ± 0.557. Non- significant increase in glucose level as it was changed from 101 ± 4.112 to 103.7 ± 4.957. Non- significant increase in triglycerides level as it was changed from 85 ± 6.719 to 86.7 ± 6.102. Non- significant increase in cholesterol level as it was changed from 90 ± 4.198 to 97.3 ± 4.152. Significant increase in HDL level as it was changed from 55 ± 3.552 to 65.4 ± 4.117 ($p < 0.001$). Non- significant decrease in LDL level as it was changed from 17 ± 4.477 to 14.6 ± 3.690

Table (16-a)

Comparison of serum insulin MIU/ml, corticosterone ug/dl and blood glucose mg/dl in stress group (group 2) and (vitamin E60 mg group) group (3-a).

	Insulin MIU/ml		Corticosterone ug/dl		Glucose mg/dl	
	stress Gr. ٢	Vit. E 60 mg Gr.(3-a)	stress Gr. ٢	Vit. E 60 mg Gr.(3-a)	stress Gr. ٢	Vit. E 60 mg Gr.(3-a)
Mean	7	4	18.5	11	150.5	100
SD	0.546٩	0.297	2.536	0.69٩	4.859	2.07
SE	0.2067	0.112	0.958	0.264	1.837	٠.782
t	13.425		7.200		25.114	
p	<0.001*		<0.001*		<0.001*	

*significant change compared with the stress group.
SD: Standard deviation. SE: Standard error
t: Student test
p: values of Comparison between stress group and vitamin E 60mg group



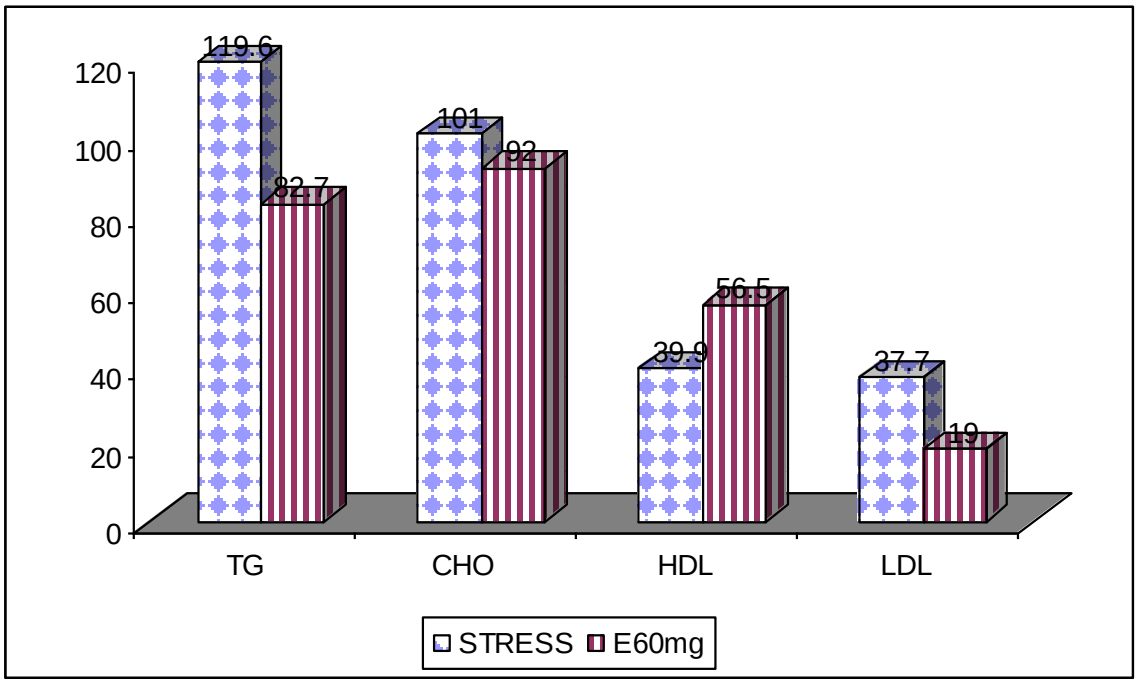
(Figure 10-a)
STRESS: Chronic stress INSU: Insulin
E 60mg: vitamin E 60 mg CORT: Corticosterone
GLU: Glucose

Table (16 -b):

Comparison of Triglycerides mg/dl, Cholesterol mg/dl, HDL-C, LDL-C in stress group (group 2) and (vitamin E 60 mg group) group (3-a).

	Triglycerides Mg/dl		Cholesterol Mg/dl		HDL-C		LDL-C	
	stress Gr. ٢	Vit. E 60 mg Gr.(3-a)	stress Gr. ٢	Vit. E 60 mg Gr.(3-a)	stress Gr. ٢	Vit. E 60 mg Gr.(3-a)	stress Gr. ٢	Vit. E 60 mg Gr.(3-a)
Mean	119.6	82.7	101	92	39.9	56.5	37.7	19
SD	8.997	4.889	5.912	4.036	4.451	4.076	8.385	5.82٤
SE	3.401	1.848	2.235	1.525	1.682	1.541	3.169	2.201
t	9.523		3.327		7.327		4.757	
p	<0.001*		<0.05*		<0.001*		<0.001 *	

*Significant change compared with the stress group.
SD: Standard deviation. SE: Standard error
t: Student test
p: values of Comparison between stress group and vitamin E 60mg group



(Figure 10-b)
STRESS: Chronic stress TG: Triglycerides
E 60mg: vitamin E 60 mg CHO: Cholesterol

Tables (16a-16b) & (Figure 10a -10b) :

Show the comparison between stress group (group 2) and vitamin E 60mg group (group 3-a) as regard the effect on insulin , corticosterone , blood glucose and lipid profile .

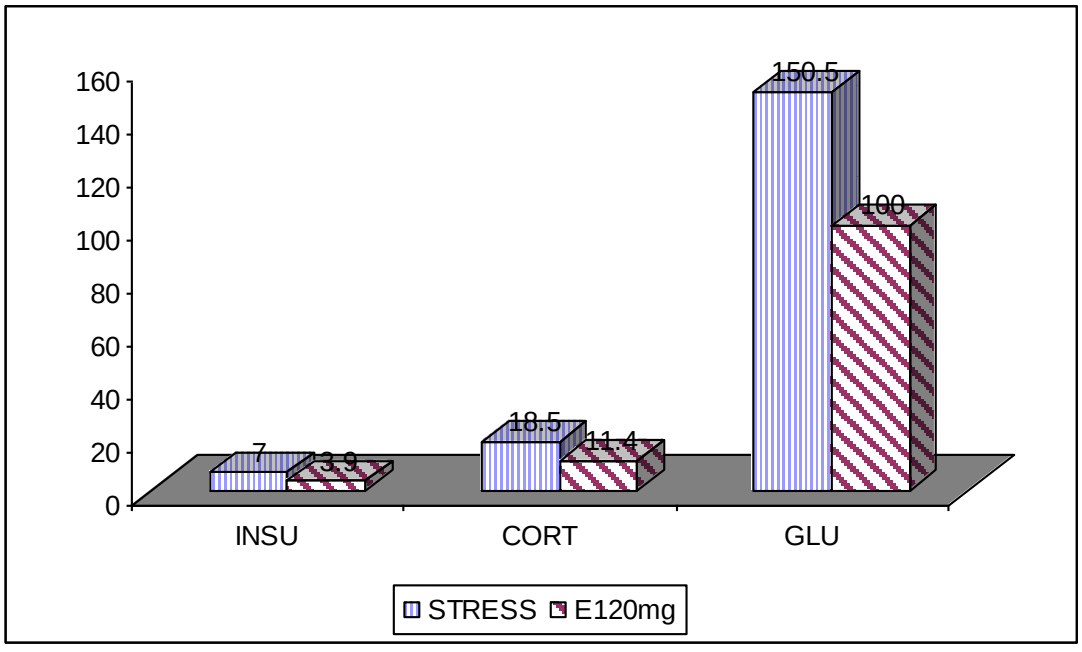
There is significant decrease in insulin level as it was changed from 7 ± 0.546 ٩to 4 ± 0.297 ($p < 0.001$). Significant decrease in corticosterone level as it was changed from 18.5 ± 2.536 to 11 ± 0.69٩ ($p < 0.001$). Significant decrease in glucose level as it was changed from 150.5 ± 4.859 to 100 ± 2.07 ($p < 0.001$). Significant decrease in triglycerides level as it was changed from 119.6 ± 8.997 to 82.7 ± 4.889 ($p < 0.001$). Significant decrease in cholesterol level as it was changed from 101 ± 5.912 to 92 ± 4.036 ($p < 0.05$). Significant increase in HDL level as it was changed from 39.9 ± 4.451 to 56.5± 4.076 ($p < 0.001$). Significant decrease in LDL level as it was changed from 37.7 ± 8.385 to 19 ± 5.82٤ ($p < 0.001$).

Table (17-a):

Comparison of serum insulin MIU/ml, corticosterone ug/dl and blood glucose mg/dl in stress group (group 2) and (vitamin E 120 mg group) group (3-b).

	Insulin MIU/ml		Corticosterone ug/dl		Glucose mg/dl	
	stress Gr. ٢	Vit. E 120 mg Gr.(3-b)	stress Gr. ٢	Vit. E 120 mg Gr.(3-b)	stress Gr. ٢	Vit. E 120 mg Gr.(3-b)
Mean	7	3.9	18.5	11.4	150.5	100
SD	0.546٩	0.243	2.536	٠.555	4.859	1.826
SE	0.2067	0.092	0.958	٠.209	1.837	0.690
t	14.338		7.266		25.772	
p	<0.001*		<0.001*		<0.001*	

*Significant change compared with the stress group.
SD: Standard deviation. SE: Standard error
t: Student test
p: values of Comparison between stress group and vitamin E 120 mg group



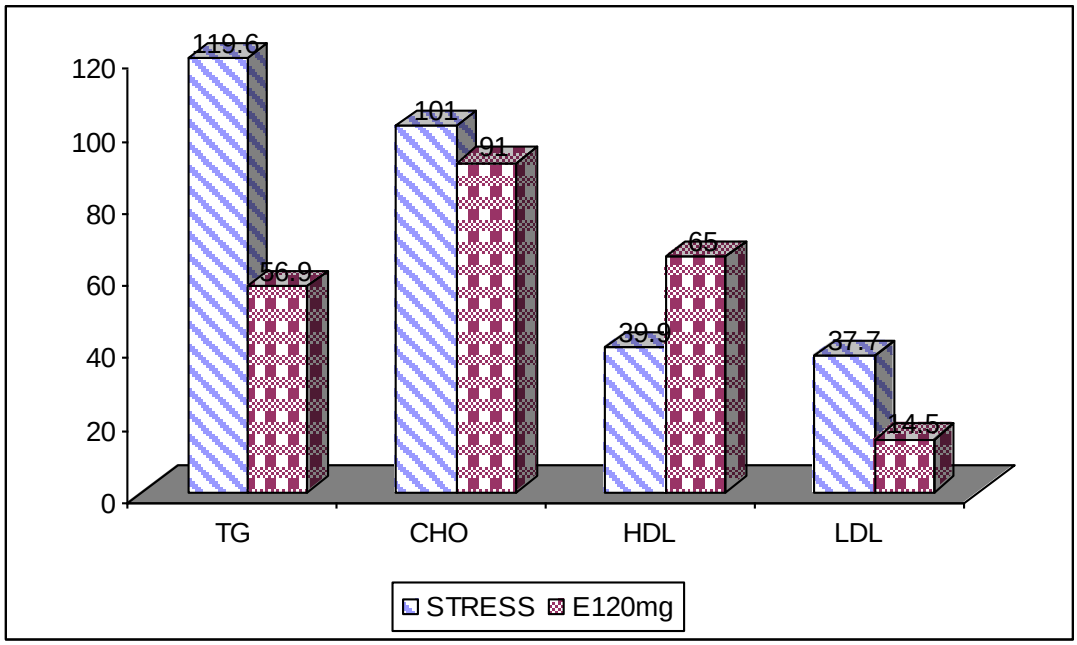
(Figure 11-a)
STRESS: Chronic stress INSU: Insulin
E 120mg: vitamin E 120 mg CORT: Corticosterone
GLU: Glucose

Table (17-b):

Comparison of Triglycerides mg/dl, Cholesterol mg/dl, HDL-C, LDL-C in stress group (group 2) and (vitamin E ١٢٠ mg group) group (3-b).

	Triglycerides Mg/dl		Cholesterol Mg/dl		HDL-C		LDL-C	
	stress Gr. ٢	Vit. E 120 mg Gr.(3-b)	stress Gr. ٢	Vit. E 120 mg Gr.(3-b)	stress Gr. ٢	Vit. E 120 mg Gr.(3-b)	stress Gr. ٢	Vit. E 120mg Gr.(3-b)
Mean	119.6	56.9	101	91	39.9	65	37.7	14.5
SD	8.997	4.059	5.912	3.437	4.451	2.751	8.385	3.923
SE	3.401	1.534	2.235	1.299	1.682	1.040	3.169	1.483
t	16.810		3.980		12.857		6.610	
p	<0.001*		<0.001*		<0.001*		<0.001*	

*Significant change compared with the stress group.
SD: Standard deviation. SE: Standard error
t: Student test
p: values of Comparison between stress group and vitamin E 120 mg group



(Figure 11-b)

STRESS: Chronic stress
E 120mg: vitamin E 120 mg
TG: Triglycerides
CHO: Cholesterol

Tables (17a-17b) & (Figure 11a -11b) :

Show the comparison between stress group (group 2) and vitamin E 120mg group (group 3-b) as regard the effect on insulin , corticosterone , blood glucose and lipid profile .

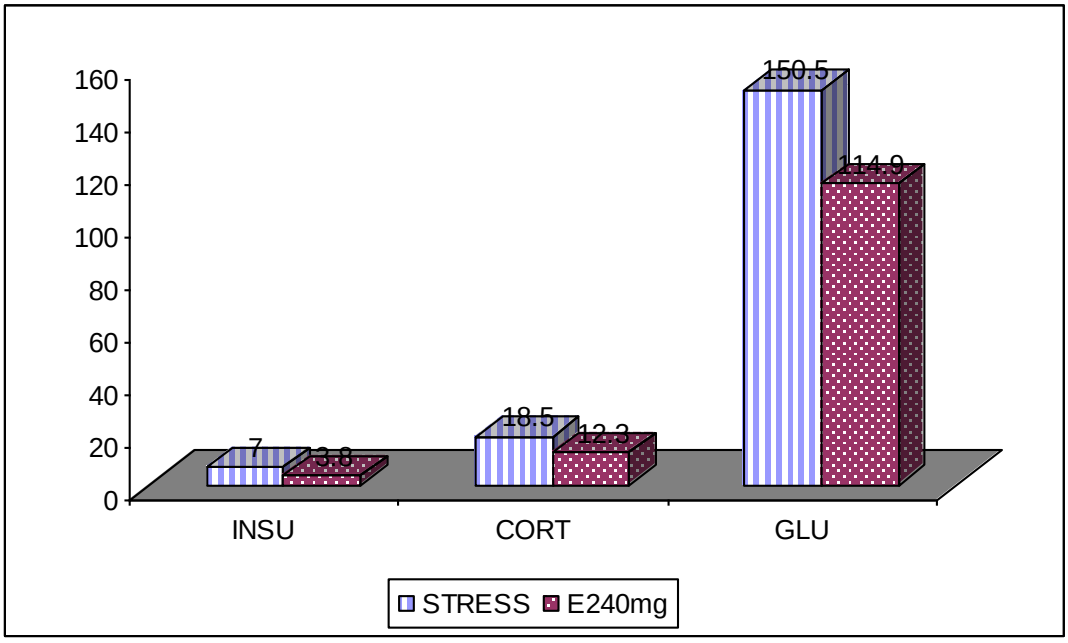
There is significant decrease in insulin level as it was changed from 7 ± 0.546 to 3.9 ± 0.243 (p <0.001). Significant decrease in corticosterone level as it was changed from 18.5 ± 2.536 to 11.4 ± 0.555 (p <0.001). Significant decrease in glucose level as it was changed from 150.5 ± 4.859 to 100 ± 1.826 (p <0.001). Significant decrease in triglycerides level as it was changed from 119.6 ± 8.997 to 56.9 ± 4.059 (p <0.001). Significant decrease in cholesterol level as it was changed from 101 ± 5.912 to 91 ± 3.437 (p <0.001).Significant increase in HDL level as it was changed from 39.9 ± 4.451 to 65± 2.751 (p <0.001). Significant decrease in LDL level as it was changed from 37.7 ± 8.385 to 14.5 ± 3.923 (p <0.001).

Table (18-a):

Comparison of serum insulin MIU/ml, corticosterone ug/dl and blood glucose mg/dl in stress group (group 2) and (vitamin E 240 mg group) group (3-c).

	Insulin MIU/ml		Corticosterone ug/dl		Glucose mg/dl	
	stress Gr. ٢	Vit. E 240 mg Gr.(3-c)	stress Gr. ٢	Vit. E 240 mg Gr.(3-c)	stress Gr. ٢	Vit. E 240 mg Gr.(3-c)
Mean	7	3.8	18.5	12.3	150.5	114.٩
SD	0.546٩	0.431	2.536	0.579	4.859	6.17٦
SE	0.2067	0.163	0.958	0.219	1.837	2.334
t	12.703		6.379		18.454	
p	<0.001*		<0.001*		<0.001*	

*Significant change compared with the stress group.
SD: Standard deviation. SE: Standard error
t: Student test
p: values of Comparison between stress group and vitamin E 240 mg group



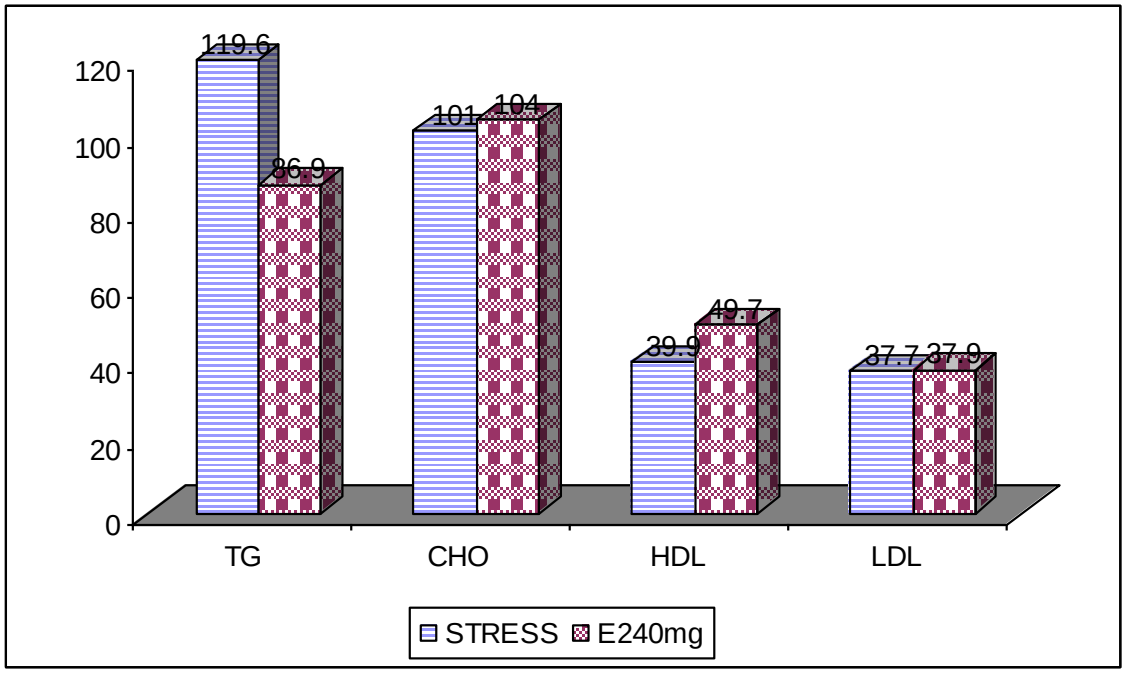
(Figure 12-a)
STRESS: Chronic stress INSU: Insulin
E 240mg: vitamin E 240 mg CORT: Corticosterone
GLU: Glucose

Table (18-b):

Comparison of Triglycerides mg/dl, Cholesterol mg/dl, HDL-C, LDL-C in stress group (group 2) and (vitamin E ٢٤٠ mg group) group (3-c).

	Triglycerides Mg/dl		Cholesterol Mg/dl		HDL-C		LDL-C	
	stress Gr. ٢	Vit. E 240 mg Gr.(3-c)	stress Gr. ٢	Vit. E 240 mg Gr.(3-c)	stress Gr. ٢	Vit. E 240 mg Gr.(3-c)	stress Gr. ٢	Vit. E 240 mg Gr.(3-c)
Mean	119.6	86.9	101	104	39.9	49.7	37.7	37.٩
SD	8.997	8.629	5.912	7.631	4.451	1.604	8.385	7.814
SE	3.401	3.262	2.235	2.884	1.682	0.606	3.169	2.953
t	6.943		0.783		5.513		0.043	
p	<0.001*		Non- significant		<0.001*		Non- significant	

*Significant change compared with the stress group.
SD: Standard deviation. SE: Standard error
t: Student test
p: values of Comparison between stress group and vitamin E 240 mg group



(Figure 12-b)

STRESS: Chronic stress TG: Triglycerides
E 240mg: vitamin E 240 mg CHO: Cholesterol

Tables (18a-18b) & (Figure 12a -12b) :

Show the comparison between stress group (group 2) and vitamin E 240 mg group (group 3-c) as regard the effect on insulin , corticosterone , blood glucose and lipid profile .

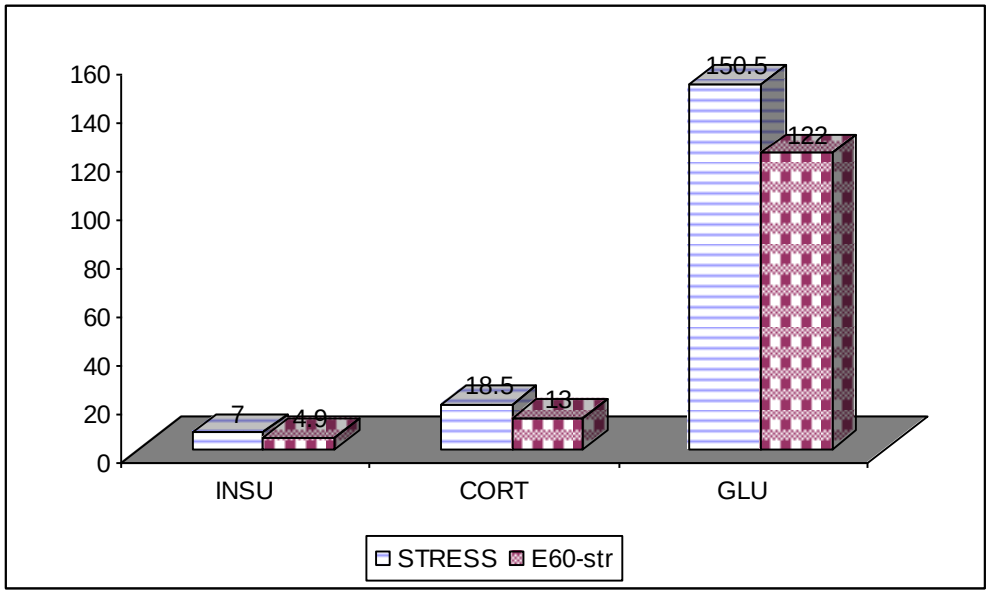
There is significant decrease in insulin level as it was changed from 7 ± 0.546 to 3.8 ± 0.431 ($p < 0.001$). Significant decrease in corticosterone level as it was changed from 18.5 ± 2.536 to 12.3± 0.579 ($p < 0.001$). Significant decrease in glucose level as it was changed from 150.5 ± 4.859 to 114.9± 6.17 ($p < 0.001$). Significant decrease in triglycerides level as it was changed from 119.6 ± 8.997 to 86.9 ± 8.629 ($p < 0.001$). Non-significant increase in cholesterol level as it was changed from 101 ± 5.912 to 104 ± 7.631.Significant increase in HDL level as it was changed from 39.9 ± 4.451 to 49.7 ± 1.604 ($p < 0.001$). Non- significant increase in LDL level as it was changed from 37.7 ± 8.385 to 37.9 ± 7.814.

Table (19-a)

Effect of vitamin E 60 mg in chronically stressed rats (4-a) on insulin, corticosterone and blood glucose in comparison with stress group (group 2).

	Insulin MIU/ml		Corticosterone ug/dl		Glucose mg/dl	
	stress Gr. 2	Vit. E 60 mg -stress Gr.(4-a)	stress Gr. 2	Vit. E 60 mg -stress Gr.(4-a)	stress Gr. ٢	Vit. E 60 mg -stress Gr.(4-a)
Mean	7	4.9	18.5	13	150.5	122
SD	0.546٩	0.590	2.536	0.647	4.859	4.099
SE	0.2067	0.223	0.958	0.245	1.837	1.5496
t	7.423		5.575		11.829	
p	<0.001*		<0.001*		<0.001*	

*Significant change compared with the stress group.
SD: Standard deviation. SE: Standard error
t: Student test
p: values of Comparison between stress group and vitamin E (60mg & stress) group



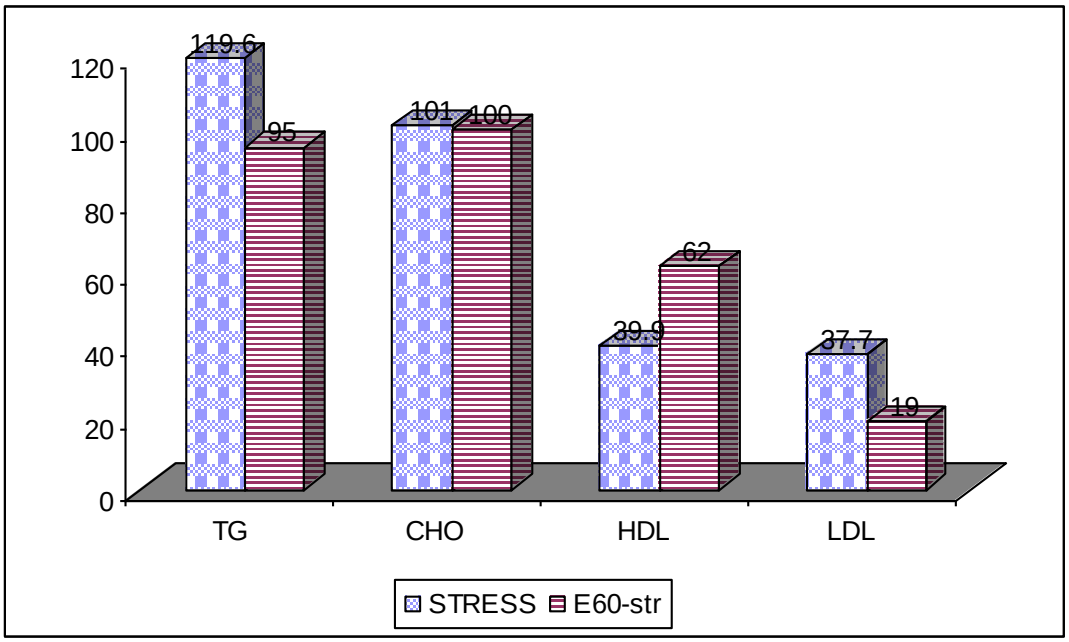
(Figure 13-a)
STRESS: Chronic stress INSU: Insulin
E 60-str: vitamin E 60 mg & stress. CORT: Corticosterone
GLU: Glucose

Table (19-b):

Effect of vitamin E 60 mg in chronically stressed rats (4-a) on Triglycerides mg/dl, Cholesterol mg/dl, HDL-C, LDL-C in comparison with stress group (group 2).

	Triglycerides Mg/dl		Cholesterol Mg/dl		HDL-C		LDL-C	
	stress Gr. 2	Vit. E 60 mg -stress Gr.(4-a)	stress Gr. 2	Vit. E 60 mg -stress Gr.(4-a)	stress Gr. 2	Vit. E 60 mg -stress Gr.(4-a)	stress Gr. 2	Vit. E 60 mg -stress Gr.(4-a)
Mean	119.6	95	101	100	39.9	62	37.7	19
SD	8.997	7.734	5.912	10.829	4.451	9.196	8.385	7.91٣
SE	3.401	2.923	2.235	4.093	1.682	3.476	3.169	2.990
t	5.448		0.214		5.808		4.259	
p	<0.001*		Non- significant		<0.001*		<0.001*	

*Significant change compared with the stress group.
SD: Standard deviation. SE: Standard error
t: Student test
p: values of Comparison between stress group and vitamin E (60mg & stress) group



(Figure 13-b)
STRESS: Chronic stress TG: Triglycerides
E 60-str: vitamin E 60 mg & stress. CHO: Cholesterol

Tables (19a-19b) & (Figure 13a -13b) :

Show the effect of vitamin E(60 mg) in chronically stressed rats (group 4-a) on insulin , corticosterone , blood glucose and lipid profile in comparison with stressed rats (group 2).

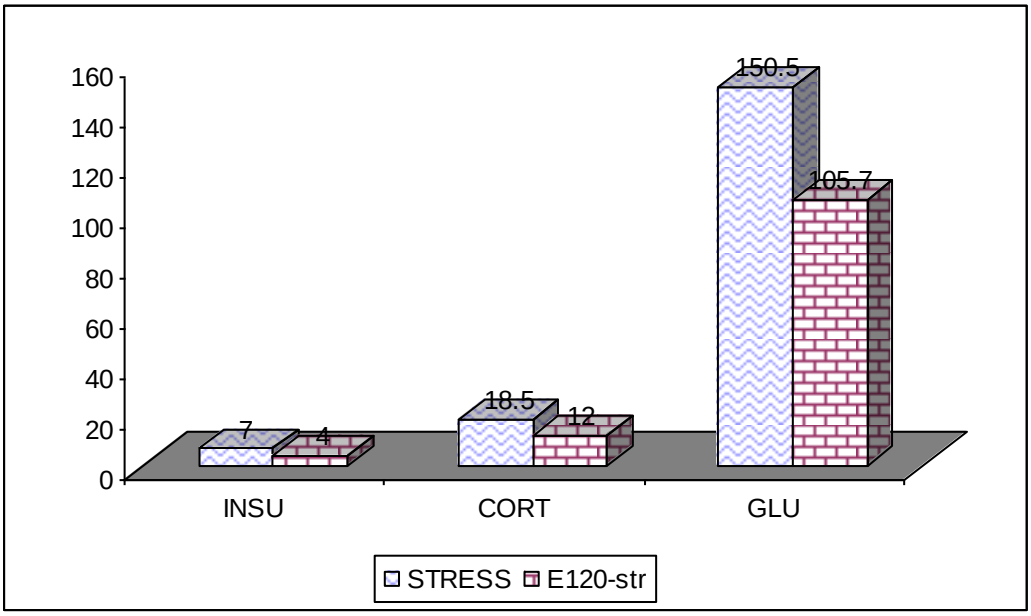
There is significant decrease in insulin level as it was changed from 7 ± 0.546 to 4.9 ± 0.590 ($p < 0.001$). Significant decrease in corticosterone level as it was changed from 18.5 ± 2.536 to 13 ± 0.647 ($p < 0.001$). Significant decrease in glucose level as it was changed from 150.5 ± 4.859 to 122 ± 4.099 ($p < 0.001$). Significant decrease in triglycerides level as it was changed from 119.6 ± 8.997 to 95 ± 7.734 ($p < 0.001$). Non-significant decrease in cholesterol level as it was changed from 101 ± 5.912 to 100 ± 10.829. Significant increase in HDL level as it was changed from 39.9 ± 4.451 to 62 ± 9.196 ($p < 0.001$). Significant decrease in LDL level as it was changed from 37.7 ± 8.385 to 19 ± 7.91٣ ($p < 0.001$).

Table (20-a):

Effect of vitamin E 120 mg in chronically stressed rats (4-b) on insulin, corticosterone and blood glucose in comparison with stress group (group 2).

	Insulin MIU/ml		Corticosterone ug/dl		Glucose mg/dl	
	stress Gr. 2	Vit. E 120 mg -stress Gr.(4-b)	stress Gr. 2	Vit. E 120 mg -stress Gr.(4-b)	stress Gr. 2	Vit. E 120 mg -stress Gr.(4-b)
Mean	7	4	18.5	12	150.5	105.7
SD	0.546٩	0.336	2.536	0.60	4.859	4.99
SE	0.2067	0.127	0.958	0.227	1.837	1.886
t	12.897		6.542		17.037	
p	<0.001*		<0.001*		<0.001*	

*Significant change compared with the stress group
SD: Standard deviation. SE: Standard error
t: Student test
p: values of Comparison between stress group and vitamin E (120mg & stress) group



(Figure 14-a)

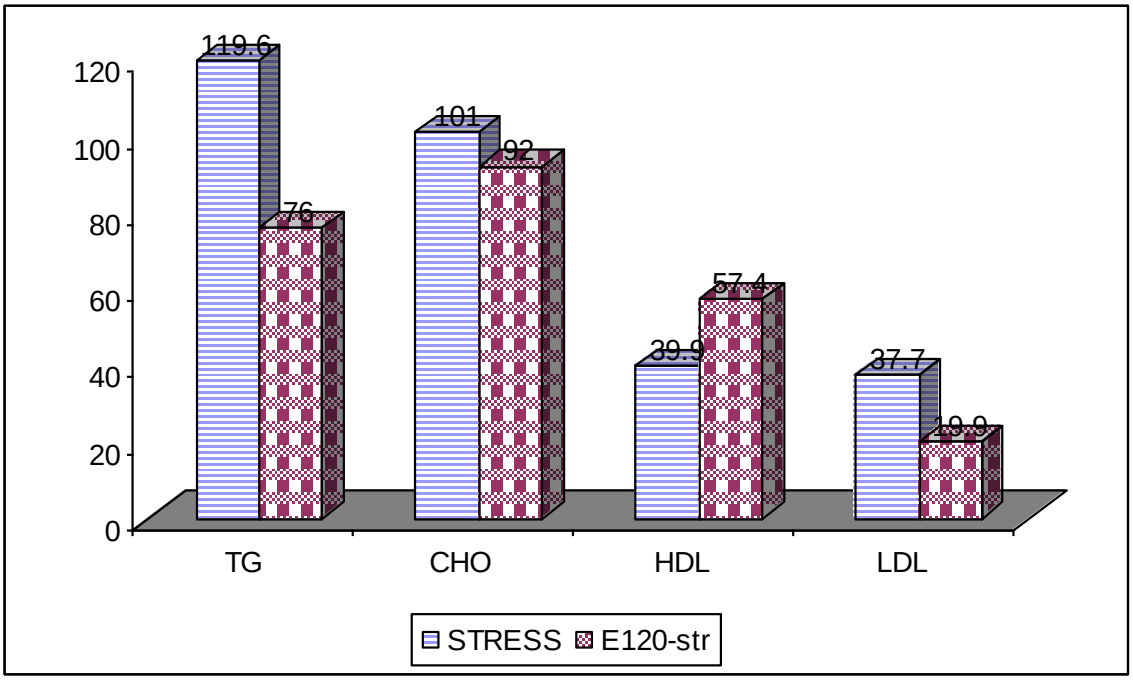
STRESS: Chronic stress
INSU: Insulin
E 120-str: vitamin E 120 mg & stress.
CORT: Corticosterone
GLU: Glucose

Table (20-b):

Effect of vitamin E 120 mg in chronically stressed rats (4-b) on Triglycerides mg/dl, Cholesterol mg/dl, HDL-C, LDL-C in comparison with stress group (group 2).

	Triglycerides Mg/dl		Cholesterol Mg/dl		HDL-C		LDL-C	
	stress Gr. 2	Vit. E 120 mg -stress Gr.(4-b)	stress Gr. 2	Vit. E 120 mg -stress Gr.(4-b)	stress Gr. 2	Vit. E 120 mg -stress Gr.(4-b)	stress Gr. 2	Vit. E 120 mg -stress Gr.(4-b)
Mean	119.6	76	101	92	39.9	57.4	37.7	19.٩
SD	8.997	6.294	5.912	8.783	4.451	6.803	8.385	7.176
SE	3.401	2.379	2.235	3.319	1.682	2.571	3.169	2.712
t	10.395		2.320		5.718		4.271	
p	<0.001*		Non- significant		<0.001*		<0.001*	

*Significant change compared with the stress group
SD: Standard deviation. SE: Standard error
t: Student test
p: values of Comparison between stress group and vitamin E (120mg & stress) group



(Figure 14-b)

STRESS: Chronic stress TG: Triglycerides
E 120-str: vitamin E 120 mg & stress CHO: Cholesterol

Tables (20a-20b) & (Figure 14a -14b) :

Show the effect of vitamin E(120mg) in chronically stressed rats (group 4-b) on insulin , corticosterone , blood glucose and lipid profile in comparison with stressed rats (group 2).

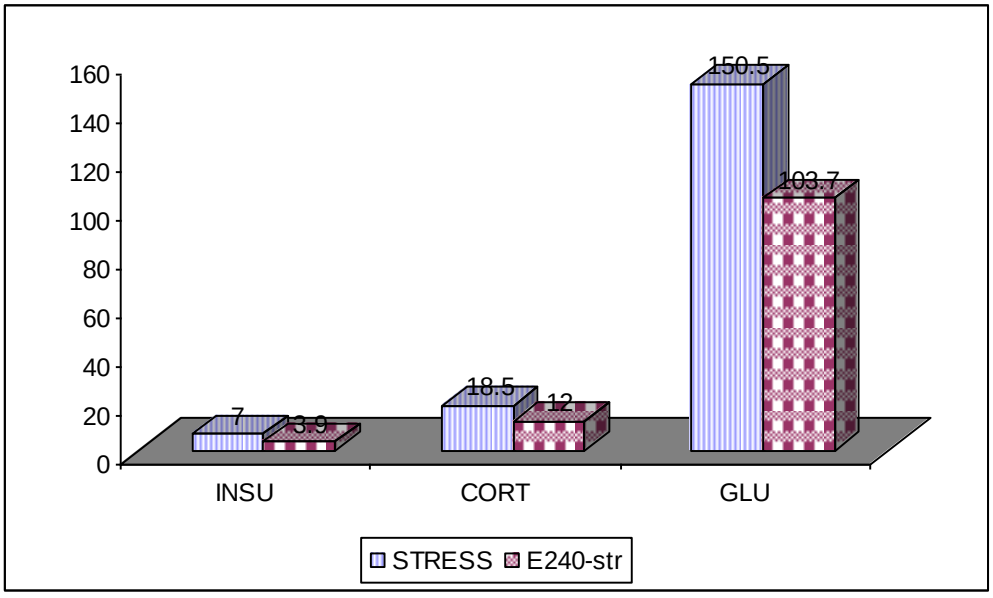
There is significant decrease in insulin level as it was changed from 7 ± 0.546 to 4 ± 0.336 ($p < 0.001$). Significant decrease in corticosterone level as it was changed from 18.5 ± 2.536 to 12 ± 0.60 ($p < 0.001$). Significant decrease in glucose level as it was changed from 150.5 ± 4.859 to 105.7 ± 4.99 ($p < 0.001$). Significant decrease in triglycerides level as it was changed from 119.6 ± 8.997 to 76 ± 6.294 ($p < 0.001$). Non- significant decrease in cholesterol level as it was changed from 101 ± 5.912 to 92 ± 8.783. Significant increase in HDL level as it was changed from 39.9 ± 4.451 to 57.4 ± 6.803 ($p < 0.001$). Significant decrease in LDL level as it was changed from 37.7 ± 8.385 to 19.9 ± 7.176 ($p < 0.001$).

Table (21-a):

Effect of vitamin E 240 mg in chronically stressed rats (4-c) on insulin, corticosterone and blood glucose in comparison with stress group (group 2).

	Insulin MIU/ml		Corticosterone ug/dl		Glucose mg/dl	
	stress Gr. 2	Vit. E 240 mg -stress Gr.(4-c)	stress Gr. 2	Vit. E 240 mg -stress Gr.(4-c)	stress Gr. 2	Vit. E 240 mg -stress Gr.(4-c)
Mean	7	3.9	18.5	12	150.5	103.7
SD	0.546٩	0.236	2.536	0.557	4.859	4.957
SE	0.2067	0.089	0.958	0.210	1.837	1.874
t	14.405		6.566		17.858	
p	<0.001*		<0.001*		<0.001*	

*Significant change compared with the stress group
SD: Standard deviation. SE: Standard error
t: Student test
p: values of Comparison between stress group and vitamin E (240mg & stress) group



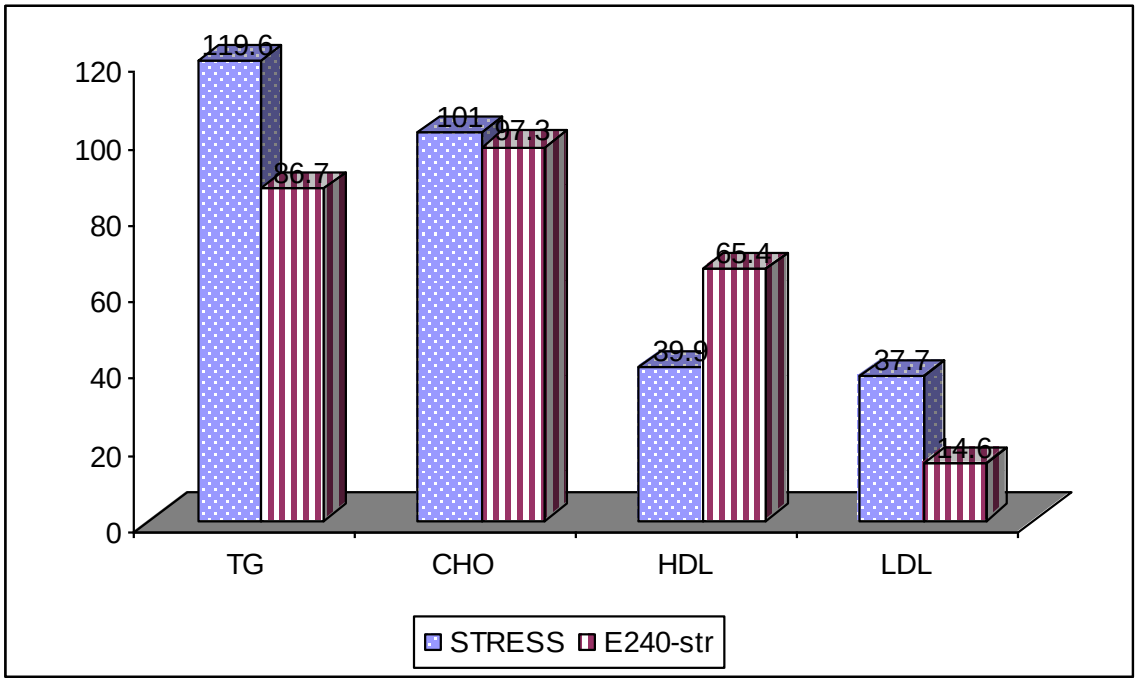
(Figure 15-a)
STRESS: Chronic stress INSU: Insulin
E 240-str: vitamin E 240 mg & stress. CORT: Corticosterone
GLU: Glucose

Table (21-b):

Effect of vitamin E 240 mg in chronically stressed rats (4-c) on Triglycerides mg/dl, Cholesterol mg/dl, HDL-C, LDL-C in comparison with stress group (group 2).

	Triglycerides Mg/dl		Cholesterol Mg/dl		HDL-C		LDL-C	
	stress Gr. 2	Vit. E 240 mg -stress Gr.(4-c)	stress Gr. 2	Vit. E 240 mg -stress Gr.(4-c)	stress Gr. 2	Vit. E 240 mg -stress Gr.(4-c)	stress Gr. 2	Vit. E 240 mg -stress Gr.(4-c)
Mean	119.6	86.7	101	97.3	39.9	65.4	37.7	14.٦
SD	8.997	6.102	5.912	4.152	4.451	4.117	8.385	3.690
SE	3.401	2.306	2.235	1.569	1.682	1.556	3.169	1.395
t	10.464		2.227		10.263		7.459	
p	<0.001*		Non- significant		<0.001*		<0.001*	

*Significant change compared with the stress group
SD: Standard deviation. SE: Standard error
t: Student test
p: values of Comparison between stress group and vitamin E (240mg & stress) group



(Figure 15-b)
STRESS: Chronic stress TG: Triglycerides
E 240-str: vitamin E 240 mg & stress. CHO: Cholesterol

Tables (21a-21b) & (Figure 15a -15b) :

Show the effect of vitamin E(240mg) in chronically stressed rats (group 4-c) on insulin , corticosterone , blood glucose and lipid profile in comparison with stressed rats (group 2).

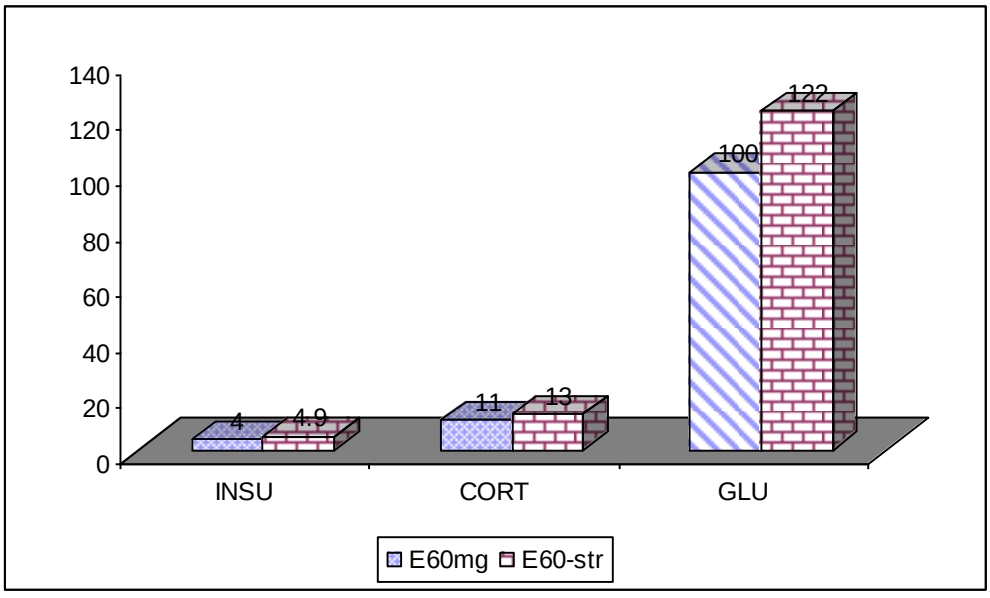
There is significant decrease in insulin level as it was changed from 7 ± 0.546 ٩to 3.9 ± 0.236 ($p < 0.001$). Significant decrease in corticosterone level as it was changed from 18.5 ± 2.536 to 12 ± 0.557 ($p < 0.001$). Significant decrease in glucose level as it was changed from 150.5 ± 4.859 to 103.7 ± 4.957 ($p < 0.001$). Significant decrease in triglycerides level as it was changed from 119.6 ± 8.997 to 86.7 ± 6.102 ($p < 0.001$). Non-significant decrease in cholesterol level as it was changed from 101 ± 5.912 to 97.3 ± 4.152. Significant increase in HDL level as it was changed from 39.9 + 4.451 to 65.4 ± 4.117 ($p < 0.001$). Significant decrease in LDL level as it was changed from 37.7 ± 8.385 to 14.6 ± 3.690 ($p < 0.001$).

Table (22-a):

Comparison between vitamin E (60 mg) group (3-a) and (vitamin E 60 mg & stress) group (4-a) in their effects on insulin , corticosterone and blood glucose .

	Insulin MIU/ml		Corticosterone ug/dl		Glucose mg/dl	
	Vit. E 60 mg Gr.(3-a)	Vit. E 60 mg -stress Gr.(4-a)	Vit. E 60 mg Gr.(3-a)	Vit. E 60 mg -stress Gr.(4-a)	Vit. E 60 mg Gr.(3-a)	Vit. E 60 mg -stress Gr.(4-a)
Mean	4	4.9	11	13	100	122
SD	0.297	0.590	0.69٩	0.647	2.07	4.099
SE	0.112	0.223	0.264	0.245	٠.782	1.5496
t	3.605		4.564		12.508	
p	<0.05*		<0.001*		<0.001*	

*Significant change compared with the corresponding value.
SD: Standard deviation. SE: Standard error t: Student test
p: values of Comparison between vitamin E 60 mg group and (vitamin E 60mg & stress) group



(Figure 16-a)

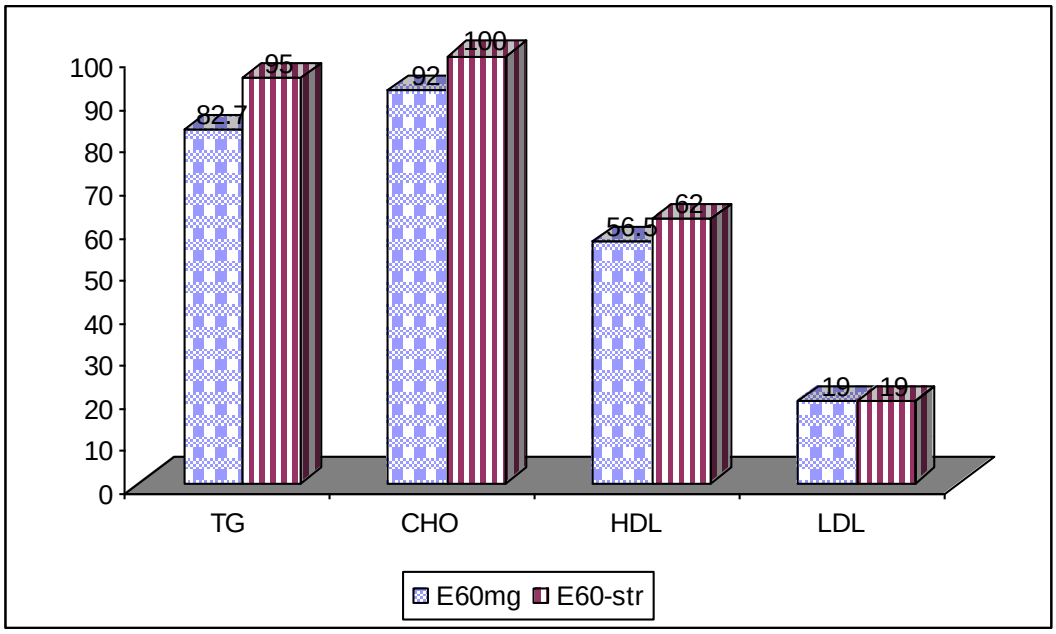
E 60mg: vitamin E 60 mg
E 60-str: vitamin E 60 mg & stress.
GLU: Glucose
INSU: Insulin
CORT: Corticosterone

Table (22-b):

Comparison between vitamin E (60 mg) group (3-a) and (vitamin E 60 mg & stress) group (4-a) in their effects on lipid profile.

	Triglycerides Mg/dl		Cholesterol Mg/dl		HDL-C		LDL-C	
	Vit. E 60 mg Gr.(3-a)	Vit. E 60 mg -stress Gr.(4-a)	Vit. E 60 mg Gr.(3-a)	Vit. E 60 mg -stress Gr.(4-a)	Vit. E 60 mg Gr.(3-a)	Vit. E 60 mg -stress Gr.(4-a)	Vit. E 60 mg Gr.(3-a)	Vit. E 60 mg -stress Gr.(4-a)
Mean	82.7	95	92	100	56.5	62	19	19
SD	4.889	7.734	4.036	10.829	4.076	9.196	5.82٤	7.91٣
SE	1.848	2.923	1.525	4.093	1.541	3.476	2.201	2.990
t	3.594		1.831		1.503		٠.054	
p	<0.05*		Non- significant		Non- significant		Non- significant	

*Significant change compared with the corresponding value.
SD: Standard deviation. SE: Standard error
t: Student test
p: values of Comparison between vitamin E 60 mg group and (vitamin E 60mg & stress) group



(Figure 16-b)
E 60mg: vitamin E 60 mg
E 60-str: vitamin E 60 mg & stress.
TG: Triglycerides
CHO: Cholesterol

Tables (22a-22b) & (Figure 16a -16b) :

Show the comparison between vitamin (E 60) mg group (3-a) and (vitamin E 60 mg under chronic stress) group (4-a) in their effects on insulin , corticosterone , blood glucose and lipid profile .

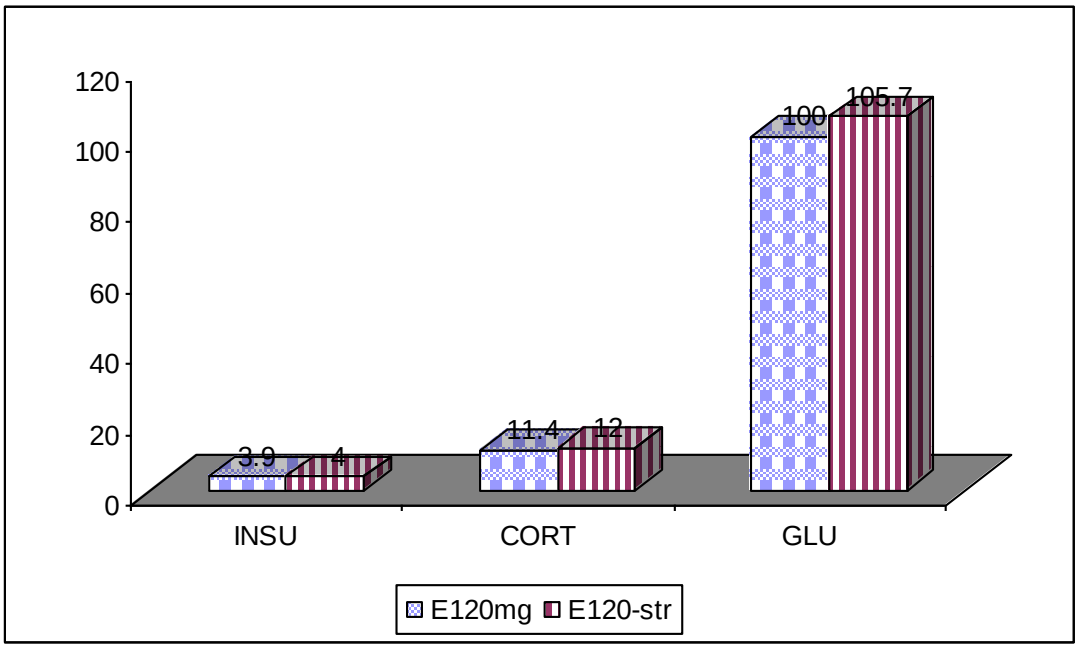
There is significant increase in insulin level as it was changed from 4 ± 0.297 to 4.9 ± 0.590 ($p < 0.05$). Significant increase in corticosterone level as it was changed from 11 ± 0.69٩ to 13 ± 0.647 ($p < 0.001$). Significant increase in glucose level as it was changed from 100 ± 2.07 to 122 ± 4.099 ($p < 0.001$). Significant decrease in triglycerides level as it was changed from 82.7 ± 4.889 to 95 ± 7.734 ($p < 0.05$). Non- significant increase in cholesterol level as it was changed from 92 ± 4.036 to 100 ± 10.829. Non- significant increase in HDL level as it was changed from 56.5 ± 4.076 to 62 ± 9.196. Non- significant change in LDL level as it was changed from 19 ± 5.82٤ to 19 ± 7.91٣.

Table (23-a):

Comparison between vitamin E (120 mg) group (3-b) and (vitamin E 120 mg & stress) group (4-b) in their effects on insulin, corticosterone and blood glucose.

	Insulin MIU/ml		Corticosterone ug/dl		Glucose mg/dl	
	Vit. E 120 mg Gr.(3-b)	Vit. E 120 mg -stress Gr.(4-b)	Vit. E 120 mg Gr.(3-b)	Vit. E 120 mg -stress Gr.(4-b)	Vit. E 120 mg Gr.(3-b)	Vit. E 120 mg -stress Gr.(4-b)
Mean	3.9	4	11.4	12	100	105.7
SD	0.243	0.336	٠.555	0.60	1.826	4.99
SE	0.092	0.127	٠.209	0.227	0.690	1.886
t	0.729		2.220		2.845	
p	Non- significant		Non- significant		Non- significant	

SD: Standard deviation. SE: Standard error t: Student test
P : values of Comparison between vitamin E 120 mg group and (vitamin E 120mg & stress) group



(Figure 17-a)

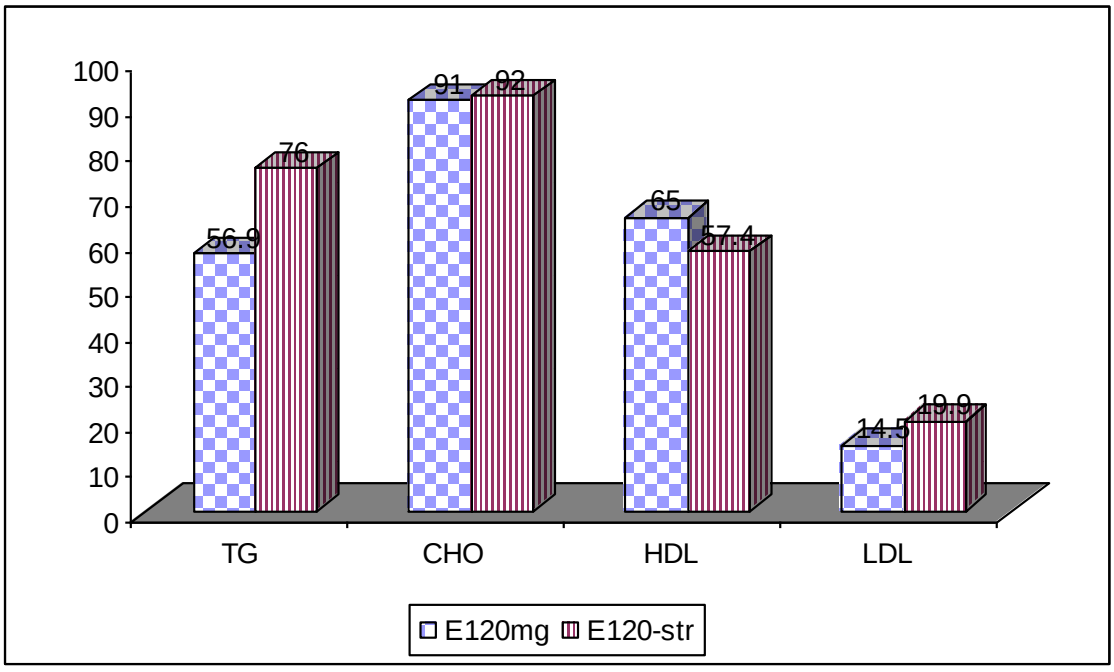
E 120mg: vitamin E 120 mg
E 120-str: vitamin E 120 mg & stress.
GLU: Glucose
INSU: Insulin
CORT: Corticosterone

Table (23-b):

Comparison between vitamin E (120 mg) group (3-b) and (vitamin E 120mg & stress) group (4-b) in their effects on lipid profile.

	Triglycerides Mg/dl		Cholesterol Mg/dl		HDL-C		LDL-C	
	Vit. E 120 mg Gr.(3-b)	Vit. E 120 mg -stress Gr.(4-b)	Vit. E 120 mg Gr.(3-b)	Vit. E 120 mg -stress Gr.(4-b)	Vit. E 120 mg Gr.(3-b)	Vit. E 120 mg -stress Gr.(4-b)	Vit. E 120 mg Gr.(3-b)	Vit. E 120 mg -stress Gr.(4-b)
Mean	56.9	76	91	92	65	57.4	14.5	19.٩
SD	4.059	6.294	3.437	8.783	2.751	6.803	3.923	7.176
SE	1.534	2.379	1.299	3.319	1.040	2.571	1.483	2.712
t	6.914		0.281		2.833		1.719	
p	<0.001*		Non- significant		Non- significant		Non- significant	

*Significant change compared with the corresponding value.
SD: Standard deviation. SE: Standard error t: Student test
p: values of Comparison between vitamin E 120 mg group and (vitamin E 120mg & stress) group



(Figure 17-b)
E 120mg: vitamin E 120mg
E 120-str: vitamin E 120 mg & stress.
TG: Triglycerides
CHO: Cholesterol

Tables (23a-23b) & (Figure 17a -17b) :

Show the comparison between vitamin (E 120) mg group (3-b) and (vitamin E 120 mg under chronic stress) group (4-b) in their effects on insulin , corticosterone , blood glucose and lipid profile .

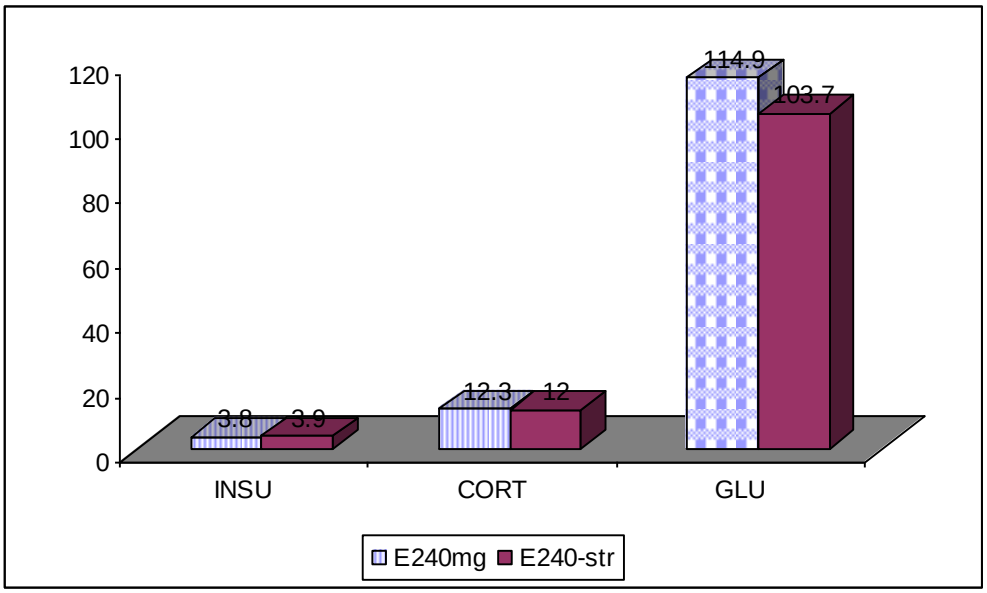
There is non- significant increase in insulin level as it was changed from 3.9 ± 0.243 to 4 ± 0.336. Non- significant increase in corticosterone level as it was changed from 11.4 ± 0.555 to 12 ± 0.60. Non- significant increase in glucose level as it was changed from 100 ± 1.826 to 105.7 ± 4.99. Significant increase in triglycerides level as it was changed from 56.9 ± 4.059 to 76 ± 6.294 ($p < 0.001$). Non- significant increase in cholesterol level as it was changed from 91 ± 3.437 to 92 ± 8.783. Non- significant decrease in HDL level as it was changed from 65 ± 2.751 to 57.4 ± 6.803. Non- significant increase in LDL level as it was changed from 14.5 ± 3.923 to 19.9 ± 7.176.

Table (24-a):

Comparison between vitamin E (240 mg) group (3-c) and (vitamin E 240 mg & stress) group (4-c) in their effects on insulin, corticosterone and blood glucose.

	Insulin MIU/ml		Corticosterone ug/dl		Glucose mg/dl	
	Vit. E 240 mg Gr.(3-c)	Vit. E 240 mg -stress Gr.(4-c)	Vit. E 240 mg Gr.(3-c)	Vit. E 240 mg -stress Gr.(4-c)	Vit. E 240 mg Gr.(3-c)	Vit. E 240 mg -stress Gr.(4-c)
Mean	3.8	3.9	12.3	12	114.٩	103.7
SD	0.431	0.236	0.579	0.557	6.17٦	4.957
SE	0.163	0.089	0.219	0.210	2.334	1.874
t	0.538		0.564		0.874	
p	Non- significant		Non- significant		Non- significant	

SD: Standard deviation. SE: Standard error t: Student test
P : values of Comparison between vitamin E 240 mg group and (vitamin E 240mg & stress) group.



(Figure 18-a)

E 240mg: vitamin E 240 mg INSU: Insulin
E 240-str: vitamin E 240mg & stress. CORT: Corticosterone
GLU: Glucose

Table (24-b)

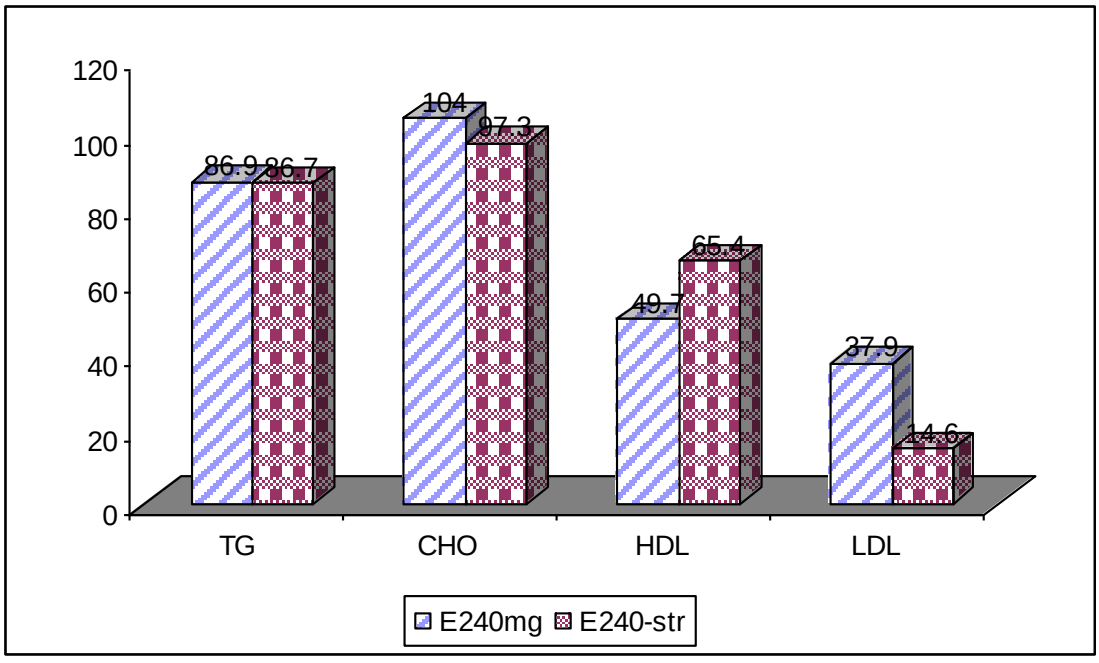
Comparison between vitamin E (240 mg) group (3-c) and (vitamin E 240mg & stress) group (4-c) in their effects on lipid profile.

	Triglycerides Mg/dl		Cholesterol Mg/dl		HDL-C		LDL-C	
	Vit. E 240 mg	Vit. E 240 mg -stress	Vit. E 240 mg	Vit. E 240 mg -stress	Vit. E 240 mg	Vit. E 240 mg -stress	Vit. E 240 mg	Vit. E 240 mg -stress
Mean	86.9	86.7	104	97.3	49.7	65.4	37.٩	14.٦
SD	8.629	6.102	7.631	4.152	1.604	4.117	7.814	3.690
SE	3.262	2.306	2.884	1.569	0.606	1.556	2.953	1.395
t	1.746		2.721		8.117		7.989	
p	Non- significant		Non- significant		<0.001		<0.001	

SD: Standard deviation. SE: Standard error

t: Student test

P : values of Comparison between vitamin E 240 mg group and (vitamin E 240 mg & stress) group.



(Figure 18-b)

E 240mg: vitamin E 240 mg TG: Triglycerides

E 240-str: vitamin E 240mg & stress. CHO: Cholesterol

Tables (24a-24b) & (Figure 18a -18b) :

Show the comparison between vitamin (E 240) mg group (3-c) and (vitamin E 240 mg under chronic stress) group (4-c) in their effects on insulin , corticosterone , blood glucose and lipid profile .

There is non- significant increase in insulin level as it was changed from 3.8 ± 0.431 to 3.9 ± 0.236. Non- significant decrease in corticosterone level as it was changed from 12.3 ± 0.579 to 12 ± 0.557. Non- significant decrease in glucose level as it was changed from 114.9 ± 6.17٦ to 103.7 ± 4.957. Significant decrease in triglycerides level as it was changed from 86.9 ± 8.629 to 86.7 ± 6.102. Non- significant decrease in cholesterol level as it was changed from 104 ± 7.631 to 97.3 ± 4.152. Significant increase in HDL level as it was changed from 49.7 ± 1.604 to 65.4 ± 4.117 ($p < 0.001$). Significant decrease in LDL level as it was changed from 37.9 ± 7.814 to 14.6 ± 3.690 ($p < 0.001$).